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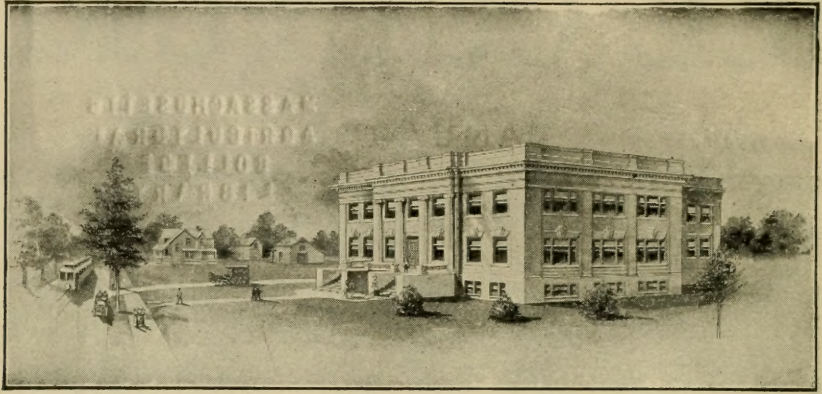
BEEKEEPING IN 1810-B

G. OSCAR FLUHARTY

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Index to Gleanings in Bee Culture

Volume XXXVIII

In using this index the reader should not fail to note that it is divided into five departments, namely, General Correspondence, Editorials, A. I. Root's Writings, Contributors, and Illustrations. The index of General Correspondence includes everything except editorials and A. I. Root's writings.

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EDITORIAL

By E. R. ROOT.

It takes but a glance at the cover design for this issue to bring to mind the fact that this is truly a wonderful age. It has been a long time since 1810, and with this thought comes the query: What will bee-keeping be like 100 years hence?

OUR INDEX FOR 1909.

THE voluminous index for the year 1909 gives promise of the extent and character of some of the good things we shall have for 1910. This index was prepared with the greatest of care by our editorial force, and our readers during the winter months will have an opportunity to go over some of the discussions of the past summer, taking them up by topic or otherwise as they may prefer.

THE ALEXANDER PLAN FOR CURING EUROPEAN (BLACK) FOUL BROOD.

MORE proof is beginning to accumulate to show that, in the case of European or black foul brood, the queen herself, and especially the kind of strain from which she comes, is apparently one source of infection. It would begin to seem that a combination of the McEvoy and the Alexander forms of treatment might be employed to great advantage. In some cases, at least, a modification of the Alexander treatment, killing the queen and requeening in three weeks, is sufficient to effect a cure.

In a matter of such paramount importance as this, GLEANINGS feels that it can not afford just yet to proclaim to the bee-keeping world that the Alexander form, or modified form of it, is going to bring relief. For the present, at least, we are seeking evidence, and wish to have the truth without favor or prejudice.

We shall have an article from a good bee-keeper and an old correspondent in our next issue that seems to favor the findings of Dr. Miller.

A SNUG WINTER; THE RELATION OF SNOW TO A WHITE-CLOVER FLOW NEXT SUMMER.

WE have had about two weeks of severely cold weather, accompanied by a high wind. Mercury has been down as low as 3 or 4 de-

grees above zero, and much of the time about 10 degrees above. The weather is moderating somewhat, and the ground is now (Dec. 25) covered with snow. Dr. Miller reports good sleighing at Marengo, and consulting the newspapers we find that there is considerable snow all over the United States. This is a good omen for clover, for we have always noticed that, when the ground was covered with snow much of the year, if we do not have bad winter-killing and a late spring, we are almost sure to have a good clover crop, and a good yield of nectar during the following summer. An open winter we find, also, is apt to be destructive because of winter-killing. Clovers can stand a hard severe freeze; but an alternate freezing and thawing, with rains, sleet, and snow, tears the clovers, root and branch, resulting in what we call winter-killing. The best condition of all is a deep snow lasting a good part of the winter, and an early spring.

IMPORTATION AND FEDERAL CONTROL OF INTERSTATE SHIPMENTS IN BEES.

MR. HOLTERMANN, in his department on page 5, in referring to the question of subjecting bees to quarantine before entrance into this country, calls attention to a statement made in England that "The United States Board of Agriculture were most careful in their regulations to prevent the chance of conveying disease into that country." In the first place, there is no "United States Board of Agriculture" that we know any thing about. Undoubtedly the United States Department of Agriculture is meant; but the Department has no authority to make such "regulations" nor to enforce them if it had. The Bureau of Entomology, through its Apicultural Expert, Dr. E. F. Phillips, has suggested that Congress ought to pass a law to control the importation and interstate shipments in bees. Until Congress does take such action the Department of Agriculture is powerless to act. That Uncle Sam will have to exercise some sort of control is generally admitted. At present, minor legislation, such as a United States bee-disease law, will probably be sidetracked to let in something else involving larger interests.

The statement is also made that "foul brood is prevalent in Northern Italy." At the present time there are only very few queens sent from Italy into the United States, and what do come over are in long-distance mailing-cages. On arrival into this country

they are introduced into a nucleus or colony, and tested to determine their grade.

This detention in the yard of a queen-breeder would afford all the quarantine that would be needed to insure safety before sending out to the general trade.

The time will come when we should unitedly ask for a Federal law to control not only the importation of bees into this country, but interstate and territorial shipments of them. The time is not opportune for asking any thing of this kind just yet, but it will come later.

ARE ROBBER-TRAPS A NEEDLESS APPLIANCE IN A WELL-REGULATED APIARY?

MR. HOLTERMANN, in his department, page 5, thinks the user of robber-traps ought to be "trapped," or, in other words, he probably means that in a well-conducted apiary there should be no robbing, and therefore no occasion for a device of this kind. Our correspondent is a honey-producer, and possibly and probably is not familiar with the conditions surrounding queen-rearing yards. We have at our home apiary, as we believe, one of the most careful men we ever had; but every now and then his helper will be a little careless, and allow robbing to get started. If a bee once gets a taste of stolen sweets it will be almost sure to begin the business of following up or hanging around baby nuclei, and the sooner it is caught in a trap, the better for those babies. We venture to say that Mr. Holtermann probably has as much difficulty in getting help that will heed instructions about robbing as we do. If he can get a new man who will let no robbing get started he is doing better than we can. While a few robbers in a yard where honey is produced, and colonies are strong, cause no trouble, they are a perpetual nuisance and expense in a queen-rearing yard.

Again, there are other times in an extracting or comb-honey yard where it will be well to put a robber-trap in operation. This is especially true where the bees are located next to a highway. We have demonstrated to our satisfaction that robbers generally come from only one or two colonies. The old fellows in these hives teach the younger ones their bad tricks. Trap them once, and the power of a bad example is eliminated, and one can work among his bees with some degree of comfort.

FOUL-BROOD LEGISLATION FOR KENTUCKY.

THE bee-keepers of Kentucky are making a strenuous effort to secure some form of foul-brood legislation. Those who know the situation best think it would be impracticable to secure a State-wide foul-brood law, because the legislature would not appropriate the funds sufficient to pay a State-wide inspector, including his necessary expenses. They have, therefore, drawn up a bill that is based somewhat on the county law in Ohio.

This bill, in brief, provides that, when a petition is presented to the county judge in

any county in the State of Kentucky, signed by three or more bee-keepers, stating that certain apiaries within the county are affected with disease, said county judge shall appoint a bee-inspector. Said inspector shall inspect all colonies of bees, hives, and implements, and shall notify the owner if disease is found, and how to cure the same; that if the owner fails or refuses to apply the treatment, the inspector may order their destruction as a nuisance. There are other provisions that usually go with the ordinary foul-brood bill.

The funds for this measure are to be provided by a special tax of five cents for each colony owned in the State. The amount so collected shall constitute a special fund to be disposed of in the payment of the salary and actual expenses of the bee-inspector. It is also provided that said fund can be used in no other way.

This is, in substance, the form of the Ohio law, with two exceptions—1. Our statute imposes only a one-cent tax; and, second, if the funds so collected are not called for within three years they are to revert to the general fund. These two provisions make our Ohio law a practical dead letter. In the first place, the one-cent tax does not provide sufficient funds to pay an inspector, in the average county, for time and expenses to do his work in a satisfactory manner. In the second place, what little moneys do accumulate are very apt, by the three-year provision, to go into the general fund. About the time that foul brood is discovered, there are no funds available unless the disease breaks out before the expiration of the three-year limit; and even then, as we have explained, the funds are insufficient.

The bill that our Kentucky friends have drawn seeks to eliminate these two bad features. Drs. E. E. Corliss, of Brooksville, Ky., and M. A. Aulick, of Johnsville, Ky., would like to get in touch with all those who would co-operate in getting this bill enacted into law. Our Kentucky subscribers are requested to communicate with them at once.

THE WORK OF THE BUREAU OF ENTOMOLOGY ON BEE DISEASES FOR 1909.

It may be of interest for us to present to our readers a brief account of the work of the Bureau of Entomology of the United States Department of Agriculture on bee diseases for the year 1909. This work was begun by Dr. E. F. Phillips as soon as he took charge of the bee-keeping work for the Bureau. He was fortunate in securing the services of Dr. G. F. White as bacteriologist. Dr. White is doubtless the best-trained and most experienced man at work on this important line of investigation, and he has already obtained results which have baffled bacteriologists for many years. The year just closed has been by far the heaviest in the history of this work.

In 1908 Dr. White established the cause of American foul brood to be *Bacillus larvæ*, and since that time he has been engaged in

a more detailed study of this bacillus for the purpose of applying knowledge of this germ to practical treatment.* He has also been at work on European foul brood, or "black brood," as it is sometimes called. It will be remembered by many of our readers that, at the Detroit meeting of the National Beekeepers' Association, Dr. White mentioned another bacillus which he suspected might prove to be the cause of this disorder. This has not been fully proven yet.

During the summer of 1909 the Bureau asked for samples of diseased brood from all parts of the United States through the bee journals. Thousands of circulars were also sent out to correspondents, asking for samples where diseases existed. As a result, over 600 samples of brood were examined bacteriologically, bringing the total number which are recorded to more than 1000. At the Sioux City meeting of the National Beekeepers' Association, Dr. Phillips showed two maps of the United States, giving the distribution of American foul brood and European foul brood as shown by these samples. These indicated that the two diseases are much more widespread than is usually supposed, and fully justify the position of the Bureau that there is no more important work to be done for American bee-keepers than an investigation of brood diseases. This information concerning the distribution of diseases is being used to send circulars to bee-keepers in infected regions as far as the limited office force will permit, but is of special value for use before legislatures which are being asked to pass foul-brood laws. We understand that the Bureau does not expect to publish this material, at least for another season, in order to make it more nearly complete; but we are sure that any committees which are to present foul-brood bills to their legislatures this year can obtain the available data for their own States by writing to the Bureau.

It is difficult for bee-keepers not trained in bacteriological work to reconcile the conflicting statements of various writers on this subject, or to understand what claims are fully proven. To help clear up this state of affairs Drs. White and Phillips have been at work on a paper in which all the important papers on the causes of bee diseases are reviewed and analyzed, and the claims examined in the light of our present knowledge of these subjects. We understand that this paper is to be completed within a short time, and we hope that it will clear up the present unfortunate confusion.

The bee-keepers of Massachusetts, Pennsylvania, New Jersey, Maryland, Kentucky, Alabama, Illinois, and Oregon are anxious to have foul-brood laws passed, and, as far as possible, in all these cases the Department has aided the bee-keepers in their efforts. In several cases the proposed bills have been partially or entirely drafted by the Bureau.

In asking for such laws the maps showing the spread of the two diseases are of much value, and this information is always given by the Bureau in such cases.

We understand that the Bureau makes it a rule not to write letters to State legislators urging them to pass such bills; and this is perhaps as well, for there might be a feeling on the part of some of these men that the federal Department was trying to dictate what they should do. If the Department furnished all the information which it has at hand to the committee of bee-keepers who are urging such bills, no more can be asked.

It will not do, however, for bee-keepers to rely entirely on foul-brood laws to control diseases. An educational campaign to inform the thousands of bee-keepers over the country is badly needed. The Bureau of Entomology is trying to do its share in this work. When a sample of diseased brood is received, a request is sent for names of other bee-keepers near at hand, and they are also sent a circular on brood diseases. Over 10,000 postmasters were also requested to send in the names of bee-keepers in their vicinities during the summer of 1909, and, as far as possible, circulars were sent to the persons whose names were received. The present appropriation of the Bureau for bee culture will not permit of the hiring of an office force large enough to carry on this work very extensively, but the force is used in this way as far as possible.

In the matter of treatment, the Bureau, we are advised, has not seen fit to change its recommendation of the shaking treatment. Experiments on the effects of various disinfectants on *Bacillus larvae* have been performed, and the effects of various drugs in syrup fed to diseased colonies have been studied. The results of some of these experiments are, we understand, to be published this winter. So far the results have not shown that the drug treatments, so much advocated in Europe, are of any value in practical work.

This result will not be a surprise to American bee-keepers. In a paper read before the National Beekeepers' Association at Sioux City, Dr. Phillips outlined what is now known and what is not known about the treatment of bee diseases. He pointed out the necessity of a thorough knowledge of the causes of the brood diseases before any great advance can be made in treatment. This is, perhaps, a point which many do not realize; but it is evident that experiments based on such knowledge will give better results than the haphazard recommendations on drug treatments which have so often been made without a basis of facts.

Dr. Phillips announced at Sioux City that, during the season of 1910, the Bureau expects to continue the work on the distribution of the two diseases on a still larger scale. We hope that our readers will co-operate by sending in samples when the time comes to aid in this work which will prove so important to our industry. Let us see if we can not swamp the bacteriologist.

* There is some reason in support of the belief that this is what is called *Bacillus Brandenburiensis*, or *Bacillus Burri*, in Europe. See GLEANINGS, page 684, July 1, 1908.

STRAY STRAWS

BY DR. C. C. MILLER

REFERRING to last item, p. 786, I think the Dadants practice feeding candied honey, smearing it over the top-bars of brood-chamber.

BEFORE 1861 I suffered severely with rheumatism, and since then have had none. I began keeping bees in 1861. I don't know whether there is any relation between the two facts.

HUBER, I have a Quaker mill like yours, and am miller-in-chief to the Miller family. It's great to grind your own wheat, have all of the wheat in the flour, and know just what you're eating. And the gems from that whole-wheat flour! Yum! yum!

J. E. CRANE, it's true, as you say, p. 758, that bees often fill a center bait before strong enough to do much more; but another fact of more importance to me is that that prompter beginning in the center may make the difference between swarming and not swarming.

A MISTAKE is made, p. 727, in saying that hives 10 feet apart in the row and rows 10 feet apart makes hexagons. It makes squares. Put hives 10 feet apart, in the row, and rows 8 feet 8 inches apart, and you will have hexagons, the center of each hive being just 10 feet from the center of each of the surrounding 6 hives. If you put a pair of hives instead of each single hive, you will double the number of hives on the same ground, and be just as safe from bees entering wrong hives.

PRECONSTRUCTED queen-cells are the kind the bees prepare for a prime swarm, and I supposed the only kind. Now comes Adrian Getaz, a careful observer, who says, *American Bee Journal*, 367, that, after having destroyed queen-cells in a colony for two or three weeks, he found some whose bases showed that they were post-constructed, notwithstanding the presence of a laying queen. This, however, was not an entirely normal case of preparation for a prime swarm, as the swarming fever had been intensified by the destroying of previous queen-cells.

J. L. BYER, you seem to be somewhat off in your ideas, p. 780, of what I've been doing. I haven't abandoned feeding thin syrup in the fall, for I never did it. All that I ever did of that was experimentally on a small scale fairly early. Neither would I feed late any thing so thin as two-to-one. I've fed barrels of sugar for winter, but always two and one-half to one, and I wouldn't risk feeding it without acid. I don't know from experience about the two-to-one. No, at present I'm "not mixing honey with the feed." Just now I don't recall ever mixing an ounce of honey that way.

THAT BEES aid in the fertilization of fruits is, of course, well known. That they aid fruits to resist frost is new to me. But that

is just what was claimed in a conversazione, *British Bee Journal*, 413, and with the explanation given it looks reasonable. It is well known that a blossom remains fresh a considerable time awaiting fertilization, and then promptly dries up. Well, during that "awaiting" time the stigma is tender, easily affected by frost; but when dried up the little fruit is resistant. So with plenty of bees there is less danger from frost. [This looks reasonable and we believe it is true.—ED.]

NONE OF MY funeral whether field bees unload in supers or brood-chamber; but it's hardly proven, p. 763, that it's always in supers. That "suppose" 15 pounds a day coming in, and all cells already filled, might be answered by the question, "Does that happen?" At any rate, when honey comes in 12 pounds a day you can always shake thin honey out of the brood-combs by the pound. And there's no need for 12 pounds in the brood-chamber, for some of it could be carried up soon after being brought in. If field-bees go straight to the supers it seems 'hey might take their pollen there too, instead of dumping it in the brood-chamber.

"THE CANDY-BILL of Uncle Sam is \$130,000,000 a year," says the *Baltimore News*. "It is said by experts that the enormous increase in the use of candy is the direct outcome of a corresponding decrease in the use of alcohol. Alcohol destroys the taste for sweets, and correspondingly the heavy candy-eater is not likely to be the person who has a strong liking for whisky, beer, or wine. In the last few years the admitted gain of sobriety among all classes of people has had the effect of adding to the business of the candy-maker by leaps and bounds." All of which is good—very good. Now let the word go out that it would be still better if honey should replace three-fourths of the candy.

LOUIS SCHOLL, p. 757, I don't want to get "a good swat" along with the editor, and so I'd like to come to an understanding. It's a matter of serious practical importance. The belief of some is that the diameter of a cell is constantly lessened by the addition of cocoons to the side-walls, and so no comb more than five years old should be used. I believe that a comb may be used for 50 years or more. There is a constant thickening of the midrib, and a constant deepening of the cell to compensate for it, so that the diameter of the cell always remains sufficient for a full-sized bee. Of course there may be such a thing as such close spacing or such a thick midrib that the depth of the cell is too little for a full-sized bee. But I don't believe it ever happened that a cell of full depth was made too narrow by cocoons for good use. Your bees were dwarfs, not because of the diameter, but the depth of the cells. Neither the editor nor I thought the bees could spread the combs; but we thought the bees could spread the combs; but we thought you were equal to the task, and that if you would do so you would get bees of full size. By the way, that ½-inch midrib must be about 100 years old.

NOTES FROM CANADA

By R. F. HOLTERMANN.

QUEENS FROM EGGS.

Page 490, GLEANINGS, I believe you are right, Dr. Miller. When a colony has a queen the bees rear queens for swarming or for superseding from the egg.

SOUND REASONING.

F. P. Adams, at the recent Ontario convention, stated that artificial swarm control and artificial stimulation should go hand in hand with queen-rearing. He asked where queens would come from when swarming stopped. I share the view expressed by Mr. Gill, in the *Bee-keepers' Review*, page 373, "extensive bee-keepers can't afford to rear many queens," for I have largely bought them.

ROBBER-TRAPS.

Mr. D. M. Macdonald, in the *British Bee Journal*, page 388, in commenting on these contrivances, pities the poor innocent bees that get trapped with the marauders. In commenting on this, D. G. Taylor, page 397, states, "I think the sympathy is entirely wasted, as the bees which enter a robber-trap, which generally takes the form of a hive, are bees that have the tendency to become robbers." No doubt the bees "have the tendency to become robbers"—all bees have that tendency, and therefore such a trap is a folly which I have never heard of in Canada or the United States. The fault lies with the bee-keeper. Trap him. [See editorials.]

A NEW SITUATION IN CANADA.

At Welland there is a smelter for reducing silver ore from cobalt. In that section the bees have been almost wiped out. Some have lost all; others less. An average report is 6 left out of 45. Some attribute it to the smelter, others to large hornets which have been seen fighting bees at the entrance of the hive. Here is a problem for the government apiarist. The president of the Ontario Bee-keepers' Association, at the recent convention, stated several times that the government had given all that the association asked for. Does our faith fall short of what we might get? Let us ask for first-class equipment at the Ontario Agricultural College, and we shall likely get it.

BEEES FERTILIZE BUCKWHEAT BLOSSOMS.

During my visit to the Ontario Government Jordan Harbour Fruit Station I noticed a patch of buckwheat, partly enclosed to bar access by the bees and other insects. I at once judged that another long-hoped-for wish that the Ontario Government would carry on investigations in the fertilization of blossoms by bees was beginning to take shape. No doubt the station's first report will be to the Minister of Agriculture, the Hon. J. S. Duff; yet that did not prevent me from adjusting my eye to a small opening

available, and finding that the uncovered buckwheat had at least one third more buckwheat seeds than the covered. The horticultural official at my side, in response to my quick verdict, confirmed my opinion.

SHALL BEES BE SUBJECTED TO QUARANTINE IN ENGLAND?

In the *British Bee Journal*, page 433, Mr. Reed, at the British Bee-keepers' Association conversazione, stated that foul brood "was so prevalent in Northern Italy that bee-keepers took no notice of it." Then follows a discussion as to the advisability of stopping the importation of queens from this country, subjecting the bees to quarantine. As Mr. Reed states that, with foul brood in the hive, the bees were able to put up with it (the disease) and live and produce honey, I should say if this be true by all means get these bees; but I fancy there is a mistake somewhere. Mr. Reed also states, on the same page, "The United States Board of Agriculture were most careful in their regulations to prevent the chance of conveying disease into that country." If there are such regulations, will the editor of GLEANINGS kindly let us know what they are? I know of none. There is sometimes a difficulty in getting reliable information, especially from a distance. [See editorials.]

The Isle of Wight bee disease appears to have practically wiped out bee-keeping on that island.

THE PLACE FOR EMPTY SUPERS.

On page 490 Dr. Miller says that, when he puts empty section-supers under a partly filled one in a waning flow, the bees keep on with the super above and leave the empty super untouched. Yes, they may even complete a partially filled section and not touch the neighboring one. This is particularly true when separators are used. Whether it be a comb-honey super or an extracting-super with foundation that is put between the brood-chamber and the super already in use, I find that, with a moderate honey-flow, the tendency is to take no more honey through this empty super than necessary, and, therefore, to crowd more honey into the brood-chamber at the expense of room for brood-rearing. Now, when I add extracting-supers, and can spare the time, I take some of the nearly filled frames from the super already on the hive, put in their place empty combs, and place the new super on top with the combs which have been in use in the place formerly occupied with empties. I also take care to put the empties in the top story above the empties in the lower. This establishes an old or already accepted connection between the upper and lower story, and it makes less of a break in the interior of the hive; and I prefer it very much to leaving all new comb in one super, either next to the brood-chamber or on top. Where more than the number of supers mentioned above are in use I seek to place the frames nearest full in the top super or supers.

BEE-KEEPING AMONG THE ROCKIES.

BY WESLEY FOSTER, BOULDER, COL.

SAWED VS. SPLIT OR SLICED SEPARATORS.

The scalloped wood separator is subject to hard usage in comparison to its strength. The scalloped edges break off very easily, and great care must be used in wedging up supers, removing honey from them, and in cleaning the separators. The most breakage comes in scraping off wax and propolis. A wood separator, to be of service, should be sawed and not split or sliced; it should be free from knots and decayed wood, and thick enough so that there will be about fourteen to the inch. Some run as high as eighteen; but this is too thin, and the scallops will break off almost of their own volition. A good time to compare the merits of a sawed and a split separator is after a lot of them have been wet. The sawed separators come back into shape fairly well, while the split separator will remain warped, and, if bent into shape, will likely break.



I do not agree with the ideas of Mr. Trickey, as given on pages 722 and 723, Dec. 1, that comb-honey cases are made too strong. The single-tier wood case is not protection enough for the honey. The freight-handlers have so many goods to move that often no time can be had to move goods slowly. This is not as we would wish; but we shall have to do the best possible, and continue to fight for more careful handling of fragile goods. The railroads out this way have claims for breakage on a very large percentage of the local shipments of comb honey. The breakage is caused by careless freight-handlers, packing in cars with heavy goods, and by hard bumping of cars when switching. The rate on comb honey will no doubt be raised if more fragile cases are used. Comb honey is not packed in as heavy crates as other goods of light weight and fragile character.

Neither do I think the grading-rules draw the lines too fine or specify too many grades. The rules could be improved; but adopting the "individual" methods would destroy all standards to go by. The development of the modern methods of distribution of fruit and produce has given rise to the grading-rules established by associations of fruit-growers and producers. Take the sections of the country that have distinguished themselves by a certain high quality of product like the Rocky Ford melon or the Hood River apple. These names have been made by the growers combining, and establishing rules and shipping a uniform product.

The apples that are shipped from the West and Northwest have six grades for each variety of fruit—three for size and three for color. That makes more grades than we have in comb honey, and we can not do better than take the hint from the most successful marketers of fruit. There are no pro-

ducing sections of the country in either fruit or honey that have established a name for quality that have not adopted uniform rules for grading and packing, and shipped the goods through producers co-operating to make carloads or organizing an association to do the work.



COLORADO BEE CONVENTION.

The convention has come and gone, and a good meeting it was too. Often I would hear some one say, "Before another year goes by I am going to observe along that line myself." This is the benefit of a bee convention. By rubbing ideas together we refine our own and get a few additional good ones. Mr. Dyer gave some of his ideas on overstocking bee territory that caused some little discussion. He said he believed that, unless there were bees to gather the nectar as secreted by the bloom, the nectar would dry up and form a hard scale that would stop the secretion entirely. His idea was that the bloom yields nectar for quite a few days, and that the bees get a large amount, comparatively, from each corolla if it is kept empty by the visiting bees. Prof. Gillette said it was the rule for nectar to cease as soon as the flower became fertilized. This, in a large measure, would discount the possibilities that Mr. Dyer spoke of, though he has six hundred colonies in one location at the present time. We shall hope to know more of the outcome later on when he has given the theory a thorough test. The supply of pollen is a more serious matter here in the spring than the lack of nectar in the summer, though we have experienced the lack of both lately often than is desired.

If flowers can be bred up so that the nectar will flow before and after fertilization we shall be well out on the road to more profit from the bee. The cow gives milk out of season (according to the requirements of nature), and we hope the flowers will overstep nature a little for us.

Wilbur F. Cannon, Pure-food Commissioner, gave a talk on the pure-food law and its relation to honey. He expressed his desire to have the bee-keepers co-operate with him in stamping out any adulteration or misbranding of honey.

The most interesting feature of the convention was the lecture by Prof. Gillette on the anatomy of the honey-bee, illustrated with stereopticon slides. The honey-bee is the highest in the scale of all the members of the insect kingdom as man is in the animal. The reason for the classification of the bee at the top of the scale is because she possesses the greatest number of special organs. It is interesting to know that man and the bee have been so closely connected since the dawn of history. Alike in their tastes, social organization, and desires, wherever man has planted trees, flowers, and gardens, there you find the bee. The charm of Prof. Gillette's lecture was the genial personality of the man shining through it all.

* Mr. Trickey referred to carriers or crates, and not single or double tier shipping-cases.—ED.]

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

THE VARIATION IN THE BLOSSOMING OF THE BASSWOODS.

It was with more than usual interest that I read what Messrs. W. J. Green and A. I. Root had to say about the basswoods on page 442 of the July 15th number of GLEANINGS, as I have been brought up with the basswoods during the whole of the 63 years of my life. Among the first recollections of the old childhood home is one of my father showing mother a bunch of basswood blossoms and describing their beauty and sweetness to her, while the next spring a tree of this variety was set out near the corner of the house in which I was born. This tree is now some forty feet tall, and nearly or quite three feet in diameter. Later on, father built for himself another home, and in the spring of 1869 set out two basswood-trees about twenty feet from the house, while in the spring of 1874 another tree was set about 100 feet away, at the roadside, as an ornament and for shade to "any weary traveler" who might pass along the public highway, as my father always considered the basswood as the prettiest and nicest of all trees for shade. The two trees nearest the house are now nearly six feet in circumference; but the one by the roadside has not attained so large a growth, being only about 4½ feet around the trunk. I have thus described these trees so that the reader can the better understand what I am about to say further.

The tree first planted at my childhood home is a mid-season bloomer, and so gives me a certain understanding that the season for basswood nectar is half gone; and during all of my bee-keeping life of forty years it has guided me in not expanding my operations for section honey, but, after this bloom, to begin to contract the surplus apartment to the hives so that the season would not close by having a whole lot of unfinished sections on my hands with only a few salable ones.

One of the peculiar things about the two trees planted in 1869 is that one of them never blossoms at all while the other blossoms every year, and generally in the greatest profusion, with bees at work on it at all times when it is in bloom, while many times the tree at the old homestead will not have a bee on it, and that with the old homestead not 400 feet away. But the part which will interest Messrs. Green and Root is this: That profuse-blooming and always nectar-secreting tree is the earliest bloomer of all the basswoods about here, so all I have to do is to step out 20 feet from the door of the house to know when the earliest nectar from basswood can come in the hive. I notice that Mr. Green says that the European linden was in full bloom at Wooster, Ohio, on July 5, while Mr. Root says that the common basswood was in bloom at Medina, Ohio, on July 6. Well, this very earliest-blooming tree

opened its very first buds on July 12, and was not in full bloom until July 16, 17.

By looking at my atlas I find that Wooster, Ohio, is about 15 miles south of latitude 41, and that Medina is about 10 miles north of the same parallel, while I am about 10 miles south of parallel 43; hence Mr. Green is about 125 miles further south than Borodino, and Mr. Root only about 100 miles. It would hardly seem that a distance no greater than that would allow of so great a variation in the time of basswood bloom, and especially as Mr. Green says that the European variety is ten days later than our American.

I wish to tell the reader of something a little strange: That tree set by the highway in 1874 proved to be the *latest* bloomer of any of the basswoods hereabout; and now this day as I write, July 24, it is bursting its first buds just twelve days later than the very earliest, so that I have right under my observation not only the *first* bloom but the *last*, and thus during the most of my bee-keeping life I could tell at a glance about the probable flow of nectar from the basswood, and govern all operations with the bees in accord therewith. Here I have a difference of 12 days in the time of the blooming of our basswoods, all, so far as I know, of the same variety, while Mr. Green gives only ten days as the difference between the American and European; and this difference is not on account of the later-blooming tree growing "in dense shaded pieces of woodland," as Mr. Root suggests, for all of the four trees spoken of grow right out in "the open," separated from all other trees of any kind or nature. I have just come from the north side of a 12-acre woodlot in which some 300 basswoods grow, where I went before writing this, to see if I could find any thing later there; but there I found only two trees as late as the one by the roadside; and as the earliest bloom is gone and the latest just opening, with the others varying all the way between, basswood can be said to be "in full bloom" at Borodino, N. Y., on this the 24th day of July, while the ten-day later European variety was in full bloom at Wooster, Ohio, on July 5. Surely this is a great and varied country, and I realize more and more, as the time passes, that locality does play a very important part with those whose occupation consists mainly of apiculture.

ANIMATED EGGS, ETC.

In adding a little further to the animated-egg question, let me state that I have for years tested my eggs in warm water, as H. F. Hart mentions on page 417, July 1. All eggs that sink after a fortnight's incubation are of no value; but those which float and are individually seen to wobble (not with any movement of the water) are, of course, alive. A minute or two should be ample time for the chicks to wake up, but they generally begin to bob almost directly, and I have thought the wetting good for them, so long as they were not chilled. But by your instructions I have made a "Root egg-tester," with which I have watched a batch of eggs daily, right through the hatch, and it is simply splendid, so I'll have no further use for warm water in that direction. Thanks for that good article, which is but one among many equally valuable.

Auckland, N. Z., Aug. 16.

S. C. RHODES.

GENERAL CORRESPONDENCE

EUROPEAN OR BLACK BROOD.

Some More Evidence Tending to Show
that Requeening after the Alexander
Plan will Effect a Cure.

BY DR. C. C. MILLER.

I have an interesting letter from John T. Greene, Interlaken, N. Y., who has been doing some things hardly according to orthodox teaching in his dealings with black brood. He says:

I had six yards the past season in which nearly every colony had the disease. We started in to shake every diseased colony; but when one man, with only his wife to help, undertakes to shake about 300 colonies and care for a yard 50 miles away at the same time, he has got to go some.

We had to shake at "any old time" while daylight lasted, and then found we couldn't quite catch up. At the beginning we disinfected our hives, burning them out with a painter's torch. We also had lots of other work to do while caring for the bees.

Well, to make a long story short we began to requeen with young Italian queens (most of my bees were blacks or hybrids). We then began to wonder if the young queens would not do the business and save us a lot of work. You see we were getting tired, and wanted help. So we began to requeen and leave all the old combs in the hive, and were greatly pleased to find about 95 per cent of the colonies thus left without a trace of the disease at the close of a very light buckwheat flow.

He explains that one thing that led to a trial of this sort of treatment was the fact that the previous year a colony in very bad condition had had a young queen given to it, and some time later he was surprised to find that not a diseased cell was to be found in the hive. He also says that where a colony was weak, or did not clean up, two were united, the stronger being placed on the weaker.

Of course, as he says, it is too soon to say that there may be no return of the disease; but the plain facts that he gives are none the less valuable.

After knowing what a scourge black (European) foul brood had been in the State of New York, I had had some question whether it were not in a milder form in Illinois. According to Mr. Greene's letter there is probably no difference.

According to the teachings of Mr. Alexander, the two essential things in the treatment are, first, strength of colony; and, second, a term of queenlessness. Perhaps he would stipulate a third, the giving of a young Italian queen. My own experience confirmed and emphasized the importance of having colonies strong. But instead of having a colony entirely without a queen for three weeks I would give it a virgin at the end of ten days. Now comes Mr. Greene, who believes in strong colonies, but who makes no mention of any time of queenlessness—merely requeens. At any rate, when a strong colony was requeened a cure followed in 95 per cent of the cases.

The question arises, is the queen diseased or at fault in any way? and is the mere change of queen all that is necessary? It looks just a little that way. A number of times my assistant, upon looking at the queen of a bad colony, said, "How logy that queen appears!" And one out of five of the queens disappeared not many days after being thrown on foundation. It was not superseding; generally no queen-cells were started until after the disappearance of the queen. Were the foul brood bacilli in the body of the queen? If so, they were not in the eggs, for the brood from these eggs was in all cases healthy. Yet it seemed that in some way the queens were weak, and perhaps their worker progeny were correspondingly weak, making a change of queens favorable to recovery.

Yet it is possible that it was not a mere change of queens in the case of Mr. Greene's treatment. It must be remembered that generally, when a queen is introduced, there is a break in laying—practical queenlessness—for a day or more, and perhaps for several days. Even when the new queen begins laying, she is not up to her full count for some time, and a diminution in the amount of brood ought to give the bees a better chance to clean up.

This much seems clearly established: That bees are able to clean out a certain number of cells in European (not American) foul brood. It also seems nearly proven that bees in good heart will clean out all, if there is not too much for them to do, and that a stoppage or diminution in egg-laying diminishes the number of foul cells to be cleaned up, and increases the chances for cure. A practical question is: "How long should a colony be queenless to give it a fair chance to clean up?"

Mr. Alexander's rule was to leave the colony queenless for three weeks. But if I understand the matter correctly, Mr. Alexander had hardly gone beyond the experimental stage, and it is possible that he never tried any shorter time than three weeks. Perhaps he reasoned in this way: "It takes three weeks for all brood to hatch out, so that's the time for the colony to be queenless." But it is just possible that there is little or no chance for conveying the disease from a cell that is sealed, and that eight or ten days' queenlessness will serve the purpose just as well as three weeks. And if there be not too much cleaning up to do, it seems reasonable to believe that even less than eight or ten days may answer, when we take into account Mr. Greene's experience, and also the fact that a number of my colonies that were mildly affected cured themselves without any interference on my part.

Let me give one example of self-cure. No. 100 was foul-broody, but not very bad. July 16 I put an excluder on the hive, and then piled on it four or five (I think five) stories of foul-broody combs. Aug. 13 I took away the upper stories, out of which, of course, all brood had emerged, and then opened the lower story in order to treat it.

To my great surprise, not a single diseased cell could be found in the hive!

Marengo, Ill.

[This is all very interesting. We should be glad to get reports from one or more of the York State inspectors who have had a large experience with this disease.—ED.]

EUROPEAN FOUL BROOD.

Will the Disease Reappear Among Dr. Miller's Bees?

BY F. H. HARVEY.

I have just been reading Dr. Miller's article in the Dec. 1st issue on his experience with black or European foul brood. I note what he says about shaking the bees directly on full sheets of foundation without putting them on starters first. I have tried it, and have had the black brood reappear in a good many cases. I have also had it reappear when swarms from diseased colonies were hived on starters, both when given the partly filled section-super and when given an entirely new one. This is most apt to occur when the bees are dark or have a queen that is not first class.

If Dr. Miller's experience is like mine he will find more or less of his treated colonies showing diseased larvæ early next spring. If the colonies are reasonably strong, and the queens good young Italians, the disease will disappear from most of the colonies for the rest of the season as soon as honey comes in freely.

Regarding the time of day for treating diseased bees, I have found early morning, as soon as it is light, the best. The bees are easily handled, and do not crawl into one's clothing as they do in the evening.

Battle Creek, Mich., Dec. 6.

[This seems to carry out Dr. Miller's (or, rather, Alexander's) theory that the source of the trouble may reside in a poor queen.—ED.]

THE DEVELOPMENT OF POLLEN.

Insects Can Not Stimulate Flowers to Develop More Pollen.

BY JOHN H. LOVELL.

On p. 677, Nov. 1, a correspondent raises the following query:

Now, there is one point in connection with the pollinizing of flowers that I have never seen mentioned. The greenhouse men used to scatter the pollen by hand, and get some fruit; but now they generally keep bees, and get much better results than by hand work. Now, is not this the result of the bee working, or exercising the glands of the flower in some way? . . . Who knows but that this moving or exercising of the stamens and pistils causes the pollen ducts to put forth extra efforts? . . . I should like the opinion of some scientific bee-keeper on this subject, as I think it a profitable one for discussion.

A brief outline of the development of the grains of pollen will show that this is impos-

sible. The pollen is not secreted by ducts, and the number of grains in each anther is determined long before it is visited by insects. The manner in which they are formed is as follows:

At first the anther is a mass of small homogeneous cells, alike in size and kind, covered by an epidermis. Soon it becomes faintly four-lobed in cross-section, and a central strand of tissue is differentiated to form the connective or common base. In the mature anther these four lobes become reduced to two, each containing two cavities partially or wholly united. Each of the four lobes of the nascent anther is a center for the production of pollen. The layer of cells directly under the epidermis (the hypodermal layer) produces the pollen grains. The number of these cells varies greatly in different species of plants, from 1, 2, or 3, to many. This plate of cells, of which there is one to each of the four lobes, is called the archesporium. By a series of divisions these cells rapidly increase in number; and the outer and inner layers are differentiated into walls for the protection and nourishment of the primary central layer, which either directly, or usually by three or four divisions, gives rise to the pollen mother-cells.

The mother-cells increase greatly in size, and stain differently from the tissue by which they are surrounded. Their walls thicken, become rounded, and tend to separate from each other. The time required for the development of the pollen mother-cells is from one to two weeks.

Each mother-cell divides into four cells or grains. In the monocotyledons (grasses, sedges, and orchids) the mother-cell divides first into two cells, and then each of these hemispheres divides again to form the tetrad of pollen grains. In the dicotyledons (buttercups, roses, clovers, daisies, and deciduous trees) the nucleus of the mother-cell divides at once into four nuclei, and the cell-walls are formed later. Deviations from the number four occasionally occur, and instances are known of 2, 3, 5, 6, 7, and 8 pollen grains arising from a single mother-cell.

The wall of the pollen grain is a delicate structure which soon becomes differentiated into two layers. The outer layer is often beautifully marked in various patterns, and beset with spines and warts. At maturity the pollen-grains become a powdery mass, and the four cavities are reduced to two by the breaking-down of the partition wall in each anther lobe. In rhododendron and some other genera the four grains of the tetrad remain adherent, while in the orchids all of the grains are bound together in packets called pollinia.

The anthers open, or dehisce, in various ways, and the pollen either falls out or is forcibly expelled, or adheres to insects, birds, or other visitors to the flowers.

While only a very brief outline has been given of the development of the pollen grains, it is evident that movements of the stamens and pistils by bees can not increase

the number of grains, since the beginning of each grain of pollen long antedates the first visit of insects to the flower. But while insects can not stimulate flowers to produce more pollen, it may well be inquired whether they can not by selection produce races or species of plants which will yield more pollen than their ancestors. The number of grains of pollen in different flowers varies just as does the number of seeds. By selecting flowers with the largest number of seeds for successive generations the product may be greatly increased. May not the same be done in the case of pollen? Bees, indeed, appear to have done this; for there is a class of flowers called "pollen flowers" which contain no nectar, and which insects, chiefly bees, visit for their pollen alone. Such flowers are the anemone, poppy, St. Johnsworts, roses, mullein, and elder.

In the wild rose there is a ring of many stamens which yield a great abundance of pollen and which bees, especially the less specialized wild ones, visit in great numbers. The rose has proven a veritable thorn in the flesh to both artists and poets. Not long ago the *Youth's Companion*, on its children's page, published a large picture of a rose-bush from which bees were represented as gathering honey. Beneath the bush was a still house from which tubes ran to each flower. After passing through a refining apparatus they were depicted as bottling and carting the honey away. Alas! there is no such thing as rose honey; and, alas for such teaching of natural history!

Again, Bliss Carmen sings of "The Swarthy Bee."

He harries the ports of the hollyhocks,
And levies on poor sweetbrier;
He drinks the whitest wine of phlox,
And the rose is his desire.

Not at all. "He" does nothing of the kind, for the rose is nectarless and the phlox is a butterfly flower. Even art in these days can not dispense with science.

Bees of all kinds (and there are probably at least 3000 species in North America) are dependent upon pollen for brood-rearing. Deprived of pollen this entire group of insects would doubtless disappear. The females, therefore, for a part of the time are compelled to collect pollen diligently, and the pollen flowers seem to have been developed to meet this demand. In the tick-trefoil (*Desmodium* or *Meibomia*) when legitimate visitors alight upon the flowers, which are nectarless, the pollen is forcibly discharged by an elastic mechanism. There are many other pollen flowers, some of which have a part of the anthers more brightly colored than the others, to attract the attention of insects.

In conclusion, then, while insects can not, by irritating the anthers stimulate an individual flower to the production of a greater quantity of pollen, yet there seems to have arisen, in response to their demand for pollen, a class of flowers producing this food substance only.

Waldoboro, Maine.

ROBBING CURED.

A Change in the Position of Colonies that Resulted in the Complete Mystification of the Robbers.

BY G. A. HUMPERT.

Failures often teach better lessons than partial successes. It was owing to my inability to stop robbing this year that I finally learned something. Doubtless owing to the absolute honey dearth in my locality, and the half-starved condition of many of my colonies right at the time when white clover should be yielding, that robbing became a common event this past year. I vainly tried every means that I had read of except to imprison the robbed colony in the cellar for several days. I didn't try this, for the simple reason that I considered failure almost better than to send my bees to jail when the next few days might bring the expected honey-flow. So I usually had to break up the robbed colony in the end.

But one Sunday morning, when I found that No. 39 was being held up by an overwhelming force, I began to experiment. Reasoning that if exchanging a weak stand with a strong one was a good method of strengthening the weak one, then why not resort to this to stop robbing? No. 38 happened to be a very strong colony, so I promptly exchanged them; then I sat down on No. 38 and watched proceedings, and for five minutes I enjoyed myself hugely. The inhabitants of No. 38, after moving, poured out upon the platform by the thousands, doubtless wondering whether Mr. Williams was there to shake them or what. The robbers filled the air, they came from all directions, doubtless returning for more booty after carrying loads of it home, and, of course, they now all went for No. 38—the colony they supposed had been conquered; but, ah me! their reception was more than warm—it was blazing hot. It did me good to see them yanked about by their antennæ, legs, and wings, and to be forced to give up any little lunch they might be carrying with them.

The lambasting those robbers got was a sight worth seeing. No. 38 poured out more defenders, and the robbers began to entertain doubts of their welcome or the justice of their cause. They no longer dared to alight on the crowded platform, but zig-zagged back and forth with that slow approach and quick retreat so characteristic of the experienced robber. Finally, noting that No. 38 was fully able to care for itself I glanced at 39, and saw that every thing was quiet.

I patted myself on the back, returned to the house, and told Mrs. H. about the great trick I had played upon the robbers; then I went to church (for I hold that a bee-keeper needs all the religion he can get when his subjects take to robbing). However, when I returned I had reason to be thankful that I had had my laugh first, or I should have missed it; for there was poor 39 again being overwhelmed. I became desperate—snatched a screen the size of a lid, raised the hive from the

bottom-board, and slipped the screen between them while the outside robbers were vainly trying to get in, and the robbers inside as vainly trying to get out. I sat down and studied the matter over. Of course, it was plain enough that, when I moved 39, I had moved the robbers along that were then in the hive. They hadn't had time to tell their kith and kin of the new location of booty before I left, hence the seeming quiet at that time.

I looked at 38, all serene; and if a stray robber came within hailing distance of its strong guard he apologized immediately under pretense of a mistake, and went about his other affairs. The exchange of hives had struck me as very good strategy, and I was loath to acknowledge another defeat; but how to deal with the robbers inside of the hive when moving it—that was the problem. Reasoning that every bee—respectable or not—certainly wants to go home at night, I had previously tried moving robbed colonies before after dark, and failed to stop the robbing. Why? Did the robbers simply find the weak and demoralized colony again on the following day? or did some robbers lodge there over night? If the former, then a simple exchange with a strong colony after dark would do the trick if the latter—aha! I had an idea. I waited until dusk, when the bees stopped flying, but before it was too dark for them to find home. Then I went to 39, now quiet save the complaining murmur of imprisoned robbers and the disconsolate roving of a cluster between the screen and bottom-board—some, doubtless, from 39 that had been locked out, but the majority were field-bees from 38, the latter being pure Italians and the former blacks. I took the lid off, and a swarm of robbers instantly took wing. To make sure that all should have a chance to go I got an empty hive-body, stood it in place of 39, shook each comb in front of it, and put it in the new body, closed up, and left them for an hour to quiet down; then I exchanged 39 with 52—another strong colony—and contracted 39's entrance.

The following day I watched with interest, and, behold! it was a complete success. Since then I have employed this method a number of times without a single failure; in fact, I now consider the robbers as my allies. They promptly point out any weak colonies that need strengthening; but now, instead of shaking the combs, I simply take the lid off at dusk, give the hive a jolting, and make the exchange at once. To facilitate matters I have on hand a few wire screens nailed to frames, lid size, which I can easily slip under the hive. These are employed if the robbing is started early in the day; but if in the evening I simply contract the entrance and make the exchange at dusk.

Pittsfield, Ill.

[Your scheme of curing robbing is something similar to one described by A. I. Root in the original edition of the A B C of Bee Culture, with this difference, that he put the robbed colony in the place of the one that was *doing* the robbing. As we understand

your plan you simply put a strong colony, no matter where it is, whether engaged in the robbing or not, in the place of the one that is being robbed because it is weak and unable to put up a stiff defense. We are not sure that we have seen this before described in print, although we would be of the opinion that others had probably tried it. In a general way we think that the plan is good.—ED.]

"WEEPING" HONEY NOT NEW.

BY J. D. FOOSHE.

I note in GLEANINGS an experience by H. F. Hart with what he calls weeping honey. I have had just such an experience with this kind of honey only once in my long time of bee-keeping. About 18 or 20 years ago all the honey in my apiary, both sections and brood-combs and extracting-combs, were filled with it. I tried every way I knew to extract it, and finally gave it up and let it go back on the hives for the bees to use up during a dearth afterward. I wrote to GLEANINGS about it, and I think there were several others who had had the same experience. I do not remember now what suggestion was made by A. I. Root; but you will find somewhere on file my enquiry and his answer. I think that the article is entitled "Honey from Persimmon going to Sugar."

I was satisfied at the time that the honey was from the persimmon. We had a peculiar condition of the atmosphere that caused it, just as it happens that some years we have honey-dew, and perhaps for several we may not see a trace of it again. This year we have had more than for several years; in fact, I have been troubled with honey-dew but once or twice in all my bee-keeping experience, and only once with honey that acted as Mr. Hart reports. I think the whole trouble comes from atmospheric conditions.

I also think the so-called bee paralysis is caused by atmospheric conditions. Several years ago this disease was raging south as well as north; and I saw it about in neighborhoods, and one or two years I saw two or three colonies in my own apiary during the fall; but for years I have seen no trace of it, either in my own or neighboring apiary.

THE SEVEN-TOP TURNIP AS A HONEY-PLANT.

My good friend A. I. R. has requested me, page 484, Aug. 1, to give my experience and observation with seven-top turnip as a honey plant. The interview published in the State last spring has called forth replies, so I will, in response to friend Root, tell what I know in regard to this plant. I have for years, perhaps ever since I have been handling bees, at least 30 years or more, planted seven-top turnip for the seed alone which I sell to seedsmen, and find for this purpose it has been a very remunerative crop; but a few exceptions to this rule.

It is the earliest plant we have to bloom, beginning about the middle of March and lasting until the middle of April; and it

blooms more profusely during that time than any thing I know of, and bees have a good time gathering pollen and some honey from it. Honey enough to encourage brood-rearing, bees soon build up on it to the swarming state. I find that our late cold springs in the past few years, with heavy frost about the time turnip and fruit bloom are done, often kill all remaining flowers which bees are dependent on, and they are left in a worse state than had they not been stimulated so early. I find, also, that, while turnip is not a legume, yet it is a fine crop for a cover crop; and corn or cotton grow luxuriantly after it. I harvest my turnip seed about the first week in May, and land is then available for other crops. I have made all the way from 100 lbs. per acre to 400 lbs. I usually sow 15 to 25 acres without fertilizer; but if well fertilized and cultivated I don't know the possibilities of yield. I usually prepare after stubble. I mailed my son some seed last year in St. Paul, Minn., and he planted them in the spring, and reported they made fine seed. I usually sow here from the middle of August to the middle of October.

Coronaca, S. C., Nov. 7.

BULK COMB HONEY VERSUS SECTION HONEY.

A Locality where there are Several Short Flows is best Suited to the Production of Bulk Honey.

BY J. J. WILDER.

There are many locations where the production of comb honey in sections is very unsatisfactory, either on a small or large scale. Also the production of extracted would be equally unsatisfactory on account of the condition of the market, etc.

The production of section honey is not suitable for the farmer bee-keeper, busy man, or those engaged in bee-keeping in a slipshod way as a rule; and in the majority of cases the production of extracted honey would not suit.

There can be no doubt that there is a lot of dissatisfaction among the smaller bee-keepers over the modern hives they are using. The hives such bee-keepers generally select are those the supers of which are for section honey in some of the many styles.

It would be far more satisfactory for this class of bee-keepers to produce chunk or bulk comb honey in modern hives. It would be more economical, simple, and would give greater returns; and it is hoped that the bee-supply manufacturer will list a bulk-comb-honey super, and advocate it.

In localities where there are from two to eight light and short honey-flows at intervals during the entire season (the writer lives in one of these locations), the production of section honey can never be satisfactory; for as soon as the bees get to storing in the supers the flow is on the decline or off; and

perhaps in two or three weeks there is another such flow, with possibly a "flow" of propolis between each one. At the end of the season there are more partly filled sections than full ones, and may be those that are filled have several different kinds of honey in them, and they will not bring a fancy price.

In the production of bulk comb honey all the surplus honey can be removed at the end of each flow, whether the frames are full or not, and the honey is as nice, for it can be saved and will bring its full market value.

There are many bee-keepers in locations where the most of the honey is dark. If they would produce bulk comb honey, and can it, it would bring more on the market, and be a much better article.

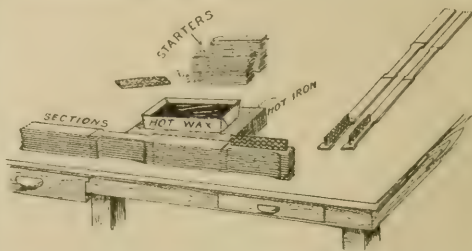
Dealers are "kicking" against shipments of dark honey in sections at any price, and soon the bee-keepers will be compelled to put it on the market in different shape.

It has been our experience that comb honey in bulk will sell wherever section honey will, and there is no reason why it should not. It is more wholesome, can be better exhibited, and it will keep longer. It is not a question whether we shall produce more extracted honey and quit comb honey in these sections less favorable for its production. We should produce more comb honey, for we would soon glut the market for this grade of extracted honey. But how can we best supply the demand for comb honey? I would suggest the old-fashioned chunk honey, which I believe will win out in the long run.

Cordele, Ga.

PUTTING IN STARTERS BEFORE THE SECTIONS ARE FOLDED.

In placing sections in a super, p. 263, May 1, I believe the joints should be placed down. This prevents the bees from daubing them over with glue. They never seem to know when they have enough on; and if the sections were very dry, as I have sometimes seen them, the joints would be so loose they would spring apart before the bees would get around to glue them. The result then is, that the top of the section will be fastened to the super above it.



When placing only one starter in a section after being folded (page 263), did any one ever try putting in starters before folding sections? I can put in starters faster than two men can fold them. This is the way I do it: Pile up the sections evenly in stacks of about ten. Have a dish of melted wax on a hot iron to keep it liquid. Piles of starters should be in easy reach. Take a stack of ten sections. Place them on a table close to the edge of the dish of wax, and pick up a piece of foundation. Dip the edge in the wax and then stick it on the section quickly.

Mason City, Ia., July 19.

W. E. BROWN.



WAHL'S HONEY AND BEE DEMONSTRATION EXHIBIT IN THE ROCHESTER INDUSTRIAL PARADE.

HANDLING BEES ON A FLOAT IN A COMMERCIAL PARADE.

A Form of Advertising that Pays Well.

BY LOUIS F. WAHL.

So much has been said through the bee journals about advertising honey that I have decided to add a word to the discussion. In Rochester, N. Y., there was a parade, October 19, of historical and industrial floats, which in every way was a triumph of art. There were 122 floats, each one representing some phase of Rochester industry. As much as seven hundred dollars was paid by some of the department stores in the decorations of their floats, the main object being to advertise. It was estimated that 100,000 people gathered to view the procession as it went by. I will describe my honey-float, as shown in the engraving, and tell something of its cost.

In the first place I paid \$1.50 for second-hand lumber. The painting of the signs cost \$3.78; the oilcloth, \$3.24; the carpet, \$1.50; cheese-cloth, \$2.25, making the total cost of material \$12.27. The best part of it is that all this material can be used again for other purposes. It took my brother three days to do the carpenter work, and Mrs. Wahl did the trimming.

The rack or floor of the float was 12 feet long, 7 feet wide, and just cleared the wheels. At each corner a 2x3-inch post, 9½ feet long, was placed, the lower end extending 2½ feet below the floor. To the bottoms of these posts a strip was bolted, on which

to tack the oilcloth so the wind could not blow it against the wheels. Also on the tops some strips were fastened for holding the signs. The color of the trimmings was that used throughout the whole parade—lavender and white.

During the parade, two boys in front, each sitting on a bee-hive, were eating comb honey, illustrating the fact that "the proof of the pudding is in the eating." My niece, who stands at my left in the illustration, did the uncapping; the young woman in the center changed the combs, while Mrs. Wahl did the extracting.

To hold the attention of the crowd we had a wire-cloth cage (the one which I used a few years ago for demonstrating in a department store). Inside this was a colony of bees, and during the parade I took out the combs, bees and all, held them up so that all could see, and also scooped up the bees with my bare hands. I doubt if half of the crowd noticed the float which followed ours. I could see people looking and poking one another, and exclaiming about the bees. One policeman stepped up close to the cage, then rushed back, brushing himself as though twenty stings had reached him at once. When we reached the courthouse, where the mayor and the officials of the Chamber of Commerce were sitting, reviewing the parade, they all took off their hats and cheered us. Although it was so cold, cloudy, and windy (about 40 degrees Fahr.), that we had to be bundled up to keep warm, the bees did their part well. If sills rest directly on the ground, but the plat-



LEWIS P. TANTON'S APIARY IN PRINCE EDWARD'S ISLAND.

any of them took flight in the cage they struck the screen and fell to the bottom where they clustered together to keep warm.

This method of advertising is just the kind that pays, and, in my opinion, it is worth ten times the cost of any other kind. After a sensation is created, no one talks about the purity of the honey or questions the price. If people like honey at all, it is necessary only to show that you are the "honey-man," and prove it by exhibiting the picture of the float.

I have never yet been afraid to tell others about bees for fear they would go into the business for themselves. The fact is, most people are afraid of the stings; and unless they are so interested that they stay up nights to read and study, they make a failure in the beginning, and quit. Then if, by chance, one happens to master the situation, he will soon find out that overstocking is a bad thing, and he will buy out some beekeeper or seek an unoccupied territory.

Chili, N. Y.

THE EFFECT OF COLOR ON BEES.

The Strongest Colonies Found in Blue Hives.

BY LEWIS P. TANTON.

I was interested in the article on page 543, Sept. 1, covering experiments as to the preference of bees for particular colors. Whether or not they have any particular tastes along this line I will not undertake to determine. That blue hives, under certain conditions, are more profitable than white, I must admit that I entertain very strong and perhaps well-grounded suspicions. Being rather

cramped for room I have had to keep my hives very close to each other. In order to prevent confusion of the bees in recognizing their homes I have all my hives painted alternately white and blue. I find a tendency to be that they work stronger, both in bees and honey, in the blue hives.

In 1908 I chanced upon a fairly good evidence in this direction. June 13th I placed a three-frame nucleus in a white hive, and on the same day a two-frame nucleus in a blue hive, both upon the same stand, not two feet from each other. The white hive gave me about 80 lbs. of surplus honey and one natural swarm, on Aug. 16. My two-frame blue hive produced over 100 lbs. of surplus honey, also one colony, by division July 28, and a natural swarm Aug. 15. But some one will answer, "One of your queens was superior to the other." This is also true; but the poorest queen, as shown by after-performance, was in the blue hive. This year I have had to feed her and all her increase to fit them for their winter rest, with the one exception of the daughter remaining in the old blue parent hive, which is full of her own honey and bees, and in good wintering condition. All her other stock are in white hives. On the other hand, the queen in the three frame white hive and all her progeny have turned out to be prolific layers and princely workers—the best in my garden. From one of her daughters in a blue hive I have this season taken more honey and more brood than from any other two hives in my apiary combined. This queen I lost by accident early in the season; but every one of her issue has given me a fair surplus of honey and an increase, in spite of a very poor honey season.

My apiary has a sheltered and shaded loca-

tion, and I conclude that dark colors attract the heat, from which this advantage comes, and are best adapted to northern latitudes and cool locations. In a hot sun-visited locality the white hive might be best. I choose the blue because it suited my taste. It seems to please the bees also.

As you probably do not hear very often from this quarter of the globe I am enclosing a snap-shot of my apiary of 22 hives. It is not a very large showing, it is true; yet it is the largest, I believe, in this Gem Island of the northern gulf.

Charlottetown, P. E. I., Oct. 23.

[That darker colors usually absorb more light than lighter ones must be admitted; and yet it is a fact that light blue, yellow, etc., reflect the light and heat almost as much as a pure white. The engraving from the photograph of the apiary illustrates this very nicely, for it would be difficult to pick out the hives painted blue, showing that the blue color reflects practically as much light as the white.

Mr. Lovell, in his experiments described in the Sept. 1st issue, as above mentioned, demonstrated that his bees preferred the blue paper. Is it not possible, then, that the bees in this case, preferring the blue color, naturally "drifted" into these hives? If all

the hives were painted blue it is doubtful whether there would be any advantage.—ED.]

HOUSE-APIARIES.

Something More Concerning their Advantages and Disadvantages.

BY B. M. CARAWAY.

I have had just four years' experience with a house-apiary, and, taking every thing into consideration, I think that the disadvantages more than offset the advantages. My building stands north and south, with the hives facing the east and west, the alley between running through the center. On each side there is room for ten hives.

When I built this shed I thought it would be a good plan to have doors that could be let down during the winter; but I have found that, in this southern climate, this is not a good plan. The temperature may be down to the freezing-point in the morning, and at noon it will be so warm that the bees will be trying to get out. For this reason I keep the doors propped up all the time.

The building proper is 32 feet long, 6 feet wide, and the side walls are 6 feet high. The



MR. B. M. CARAWAY'S HOUSE-APIARY IN TEXAS.

Mr. Caraway believes that, if he were starting anew, he would put his money into better bees and fixtures rather than into a house-apiary.

forms on either side, on which the hives rest, are swung from the joists overhead by means of $\frac{3}{8}$ -inch iron rods 42 inches long. My idea in constructing the hive-shelves in this way was to keep the ants out of the hives. I have found that it would have been better if I had had a circular piece of tin soldered around each rod near the top so as to make a sort of

cup that would hold some material which would prevent the ants from getting down. The bottoms of the hives are just 22 inches above the ground, but five or six inches would have been sufficient.

In mentioning the advantages of such a building I may say, first, that the most vicious bees are much gentler when handled



FIG. 1.—POUDER'S HOT-AIR OVEN FOR LIQUEFYING HONEY IN SIXTY-POUND CANS.

The cans are held upside down, as shown in Fig. 2; and the honey, as fast as it becomes liquid, runs down to the bottom of the oven and from thence out the gate, away from the heat.

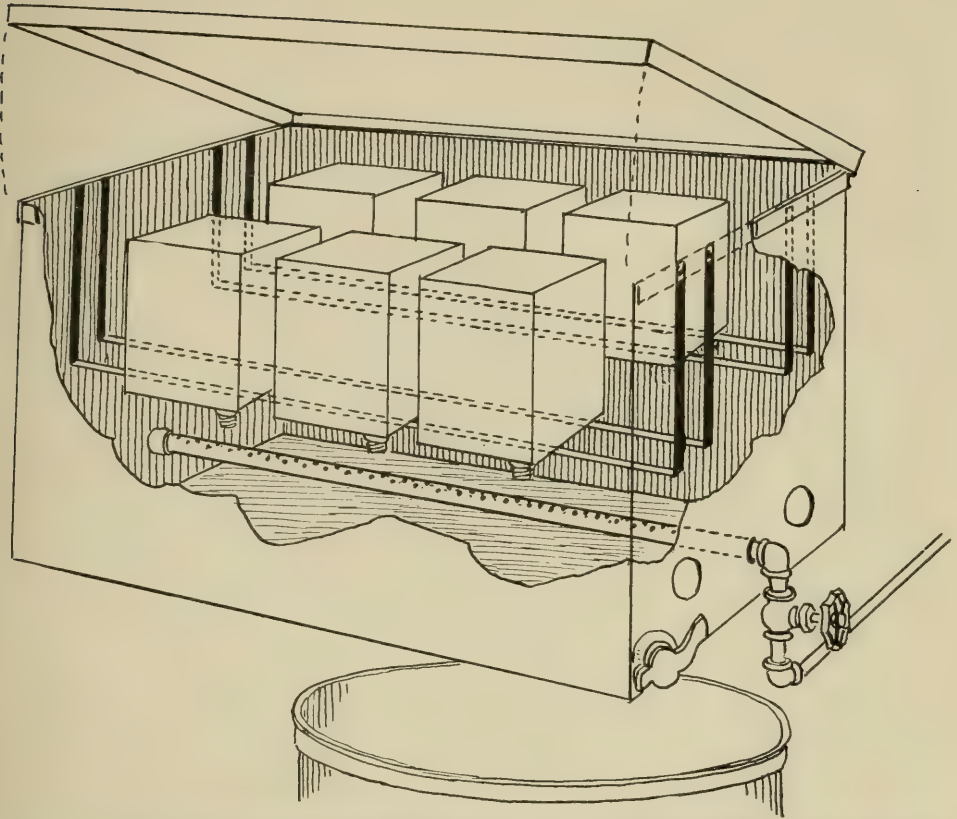


FIG. 2.—POUDER METHOD OF LIQUEFYING GRANULATED HONEY, SHOWING THE POSITION OF CANS AND GAS-BURNER IN THE OVEN.

in a house-apiary. Second, work can be done in any weather, wet or dry. Third, there is no danger of honey melting down caused by the heat. This is a most decided advantage here in Texas. Fourth, the hives need no painting, and will never rot; they are practically everlasting. Fifth, there is no danger of stock knocking over the hives and being stung to death. Sixth, in case thieves are troublesome it is not difficult to prevent them from getting in. Seventh, the bees do not consume quite as much honey in winter as they do on separate stands out of doors, the reason being, probably, that they are less apt to fly out in cool weather, and are, therefore, quieter.

Now for the disadvantages. First, the shade is too dense in the early morning. The bees in the hives outside are working about an hour before those in the building begin. Mr. Alexander never spoke a truer word than when he said that the early morning shade is detrimental to bees. Second, the bees outside gather the most honey. Third, the hives outside can be manipulated the quickest. Fourth, the expense of a building of this kind is no small item. Fifth, many bees get into the wrong hive, and there is apt to be mixing up, which, if honey is not

coming in, results in fighting. Young virgins, also, may get into the wrong entrances and kill the old queens. I have painted the fronts of the hives different colors, but this does not seem to remedy the trouble. The building is not sheltered from the winds, and sometimes when there is a stiff breeze from the south the bees are blown on toward the north end of the building, and thus get into the wrong hives. I intend to move the apiary to the woods in a more quiet location.

Summing it all up, it is my belief that, if a man has money to build a house-apiary, he had better put it into more hives or better queens or bees, or something else that is needed. I think that the beginner especially can spend his money in better ways than by putting up a building of this kind.

Dacatur, Texas.

LIQUEFYING GRANULATED HONEY.

BY WALTER S. POUDER.

For years I have depended upon the hot-water tank for melting five-gallon cans of granulated honey, but have found many inconveniences connected with the method, and have been obliged to adopt a safer and



FIG. 3.—SAMPLES OF PAPER MILK-BOTTLES SUGGESTED BY WALTER S. POWDER, FOR RETAILING LIQUID HONEY.

The stopper is crowded tightly into the small end with the wooden plunger. When clear in, it is impossible to remove the cap without the use of a knife or screwdriver. The cap is put on the small end to reduce the liability of leakage.

speedier method. To take care of the expansion I have used syphons, coal-oil pumps, funnels soldered to perforated screw caps, and other methods, but have always found a lack of tidiness; and in some instances we have ruined very superior honey by overheating. If we overlooked a nail hole near the bottom of a can we would find a can of sweetened water instead of honey; and in lifting heated cans from the water I have had the handles pull off; and the can, in falling back, would cause the hot water to slop over and scald my toes till I have seriously wished that I did not have to dabble in honey at all.

I have longed for a method in which the liquid honey would flow away from the heat as fast as it became fluid, and at last I have such a device in use, and I believe many readers of GLEANINGS will be interested. It is simply a gas oven, made of heavy galvanized sheet iron, and of a capacity for six cans, three on each side of the gas-burner, cans to be suspended on brackets in an inverted position with caps removed. When in use the honey-gate at the bottom of the oven is left open; and as fast as the honey becomes liquid it flows to the outside tank. Considerable experimenting was required in order to maintain proper temperatures, and we have learned to regulate the temperature by using a thermometer before we place any honey in the oven. Naturally the highest temperature is nearest the top of the oven, and we are able to keep within 180

and 190, and the temperature declines toward the bottom of the oven, hot air being circulated throughout. Some heat is slightly radiated against the lower part of the cans, and I find this in my favor, as it tends to prevent openings of cans being clogged with granulated honey.

The two round openings in the front are for ventilation, and to secure perfect combustion. There is a three-inch space between the burner and the bottom of the oven. Cans are suspended with a thirteen-inch space between the bottoms of the cans and the bottom of the oven, and a two-inch space over the tops of the cans; and there is also a twelve-inch space between the two rows of cans. We also find the device very convenient in melting jars of granulated honey without so much as injuring the label by simply inverting the open jars on a heavy wire screen.

Such an oven could be constructed for any capacity—for two, four, or six cans at one time, and could be used over a gasoline-stove where gas is not obtainable. A thermostat could be added, thus making it an automatic arrangement; but in my business I have not found it necessary. The honey, as it flows into the outside tank, is just right to be strained into our bottling-tank, and there is no deterioration, because it could not be overheated.

Visiting bee-keepers pronounce the entire arrangement a model of perfection, and I submit the above description by request.

PAPER MILK-BOTTLES FOR EXTRACTED HONEY.

Since Mr. J. E. Crane introduced the paper milk-bottle for extracted honey I have felt much interest in the affair; and a manufacturer of this ware has supplied me with a liberal lot of samples which I have been testing. In my opinion this bottle will fill a long-felt want where honey is offered at retail, and at such places as market-stands, for a great many people would like to take home with them a pound or so of honey if a neat container could be furnished without cost. I have used paper oyster-pails for this same purpose; but removing the honey from an oyster-pail is always untidy at the best, while the waxed bottle is very neat and attractive, and easily drained into a dish.

I believe there are several patterns of these bottles now being offered, of different sizes and shapes. The ones that I have been using have a neat paper stopper, Fig. 3, which could be sealed with hot paraffine if so desired. I also find the package very desirable for granulated honey in a damp climate such as we have here, and jars could be filled while honey is semi-granulated, and then allowed to granulate completely; and in preparing for the table the waxed paper could be easily removed. If made in quantities, suitable reading-matter could be arranged, leaving a blank space in which the producer could stamp his name.

While I have not tested these jars as to shipping qualities, I feel sure, that they would stand all requirements. I will explain that I have none of these jars for sale, but I believe they should be classed along with our honey-packages; and when understood they will be in demand, and they will fill a long-felt want.

Indianapolis, Oct. 14.

ARTICULAR RHEUMATISM RELIEVED BY BEE-STINGS.

BY W. A. PRYAL.

To have rheumatism and suffer its slings and pains, or take up a few live honey-bees and banish the tormentor with some well-directed stings, is a question that even the learned men of the medical profession can not agree upon. So when doctors disagree, we are sure to be badly at sea, to put an old saw in a slightly changed form.

The efficacy of bees' stings as a cure for rheumatism is again being discussed in this country and in Europe. In the September number of the *American Bee Journal* Dr. A. F. Bonney gives a lengthy argument on the negative side of the question. Dr. C. C. Miller, the noted apiarist and writer, takes up the same question in the October issue of the magazine named. The latter does not entirely agree with the first writer. He refers to the favorable position of the European medical fraternity in regard to the benefit of bee-stings in the cure of rheumatism; also to the fact that the preponderance of

evidence in this country is on the affirmative side. Thus the doctors stand. Who is to decide?

We of the laity bee-keepers have generally believed that the bee would drive rheumatism from our afflicted bodies; and still some apiarists have been as full of "old rheumatiz" as those who were never pricked by a bee. However, I am able to report the case of one who has shown bravery, inasmuch as the patient suffered the stings of thousands of bees in order to regain her usual health. This case has come under my observation during the past summer.

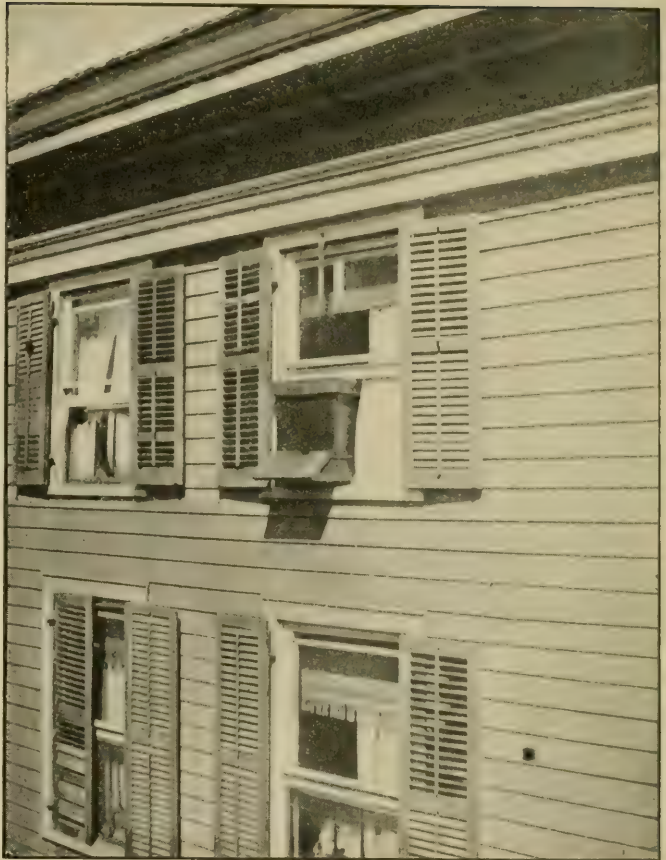
Mrs. Mary Ruttenbeck, something less than a year ago, became a sufferer from a very severe attack of articular rheumatism, the main point of attack being in her knees. The malady became so violent that she was not able to walk. The pain at times was excruciating. Her brother, Mr. Piercey, is employed at the Mare Island Navy Yard, this State, and is an ardent tender of a small apiary which he keeps on the island. Having read that bee-stings are a cure for the disease in question he sent for his sister and had her submit to the "honey-bee-sting" cure. The invalid was tenderly brought out to the apiary one fine spring day and seated in front of a bee-hive. A bee was deftly caught and made to jab its sting into the lady's knee. The insect performed its part of the operation in good style. Mrs. R. protested at being made a target for further stings. She thought the pain from one sting was sufficient for her for a lifetime—that it was enough to drive the disease from her.



MRS. MARY RUTTENBECK,
who endured the pain of a large number of bee-stings
to get relief from articular rheumatism.

But Mr. Piercey thought otherwise. He was not planning to practice homeopathic bee-sting medicine—it was to be allopathic or nothing at all. So the stinging went merrily on, the patient all the while almost fainting with the added pain. Mr. Piercey was fast working his bees to death in this new-fangled occupation he had found for them, for he did not desist until thirty-nine stings were duly planted in his sister's knees. Then she was carried away; but in leaving the apiary a bee of its own free will gave the patient a terrible jab in the neck—perhaps for good luck, or, may be, just to say that Mrs. Ruttenbeck “got it in the neck.” Any way, between getting it in the knee and in the neck she was a very sick woman for a few days. It looked for a time as if the cure were going to be worse than the disease.

The turning-point came; and after a few more applications of a less number of stings she was able to walk. She found that it was not necessary to take drastic doses of thirty-nine stings at a time. In June last she came to Oakland. It was about this time that I became acquainted with her, for a friend of hers came to me to procure good strong healthy bees that could be vouched for to sting good and plentifully when occasion demanded. I found a colony of Spanish-blacks that had a small percentage of Italian blood. I gathered some three dozen of them into a cage and told the gentleman to instruct the patient that the bees should be “well shaken before being taken.” The instructions must have been followed, for in a few weeks the lady was able to walk from the electric-car line to my place, something like a third of a mile distant. Since then she has been here a number of times—sometimes to get bees and other times to purchase fruit, for which our place is somewhat famous. On one of these occasions, about noon, which is not the best time to take outdoor pictures, I had her pose for a photograph that the readers of GLEANINGS might see the picture of a California woman who attributes her almost entire cure from rheumatism to the use of bee-stings. Yes, I wanted the GLEANINGS folks, too, to see a woman who had nerve to face a thousand bee-stings, and prove her faith in



A HIVE KEPT IN A WINDOW OF A HOUSE IN A VILLAGE.

An alley runs directly beneath this window; and, though horses frequently pass, none are stung.

the cure about which the medical profession are in doubt.

Oakland, Cal.

[An article on this subject was published in Dec. 15th issue, page 784, from Dr. Bonney.—ED.]

A COLONY KEPT IN A SECOND-STORY WINDOW IN TOWN.

BY C. H. WATSON.

I am a lover of bees; but, unfortunately, I live in the heart of a village. I am sending herewith a photograph showing my colony of fine Italians which I have in the second-floor window on the south side of my home. These bees have been very law-abiding indeed, not even bothering horses that pass in an alley beneath the window. During the past season this spot has been the very personification of industry. These little friends have visited distant hillsides; and as they have returned laden with sweets of a thou-

sand flowers they have taught me lessons of patience and faithfulness.

Westfield, Pa., Sept. 10.

POISONOUS COMB HONEY.

BY GEO. M. LORD.

Mr. Root:—Will you kindly tell me what there can be in honey to make it poisonous? Some days ago I took a swarm of bees from the eaves of a neighbor's house. There was about 75 lbs. of apparently fine white-clover honey, most of it in new comb, which had never been used for brood. All of the honey was stored this year, as the swarm came from my yard in May. At least four times I have attempted to eat some of it; but each time within twenty minutes I have been taken with severe cramps and nausea. Others to whom I have given the honey have experienced a like result.

I find after the honey has been extracted by melting on the stove it loses its poisonous quality. Whether due to the heat used or to the absence of the comb I can not say.

Although the party from whose roof I got the honey sold and gave away about fifty pounds to at least a dozen different people, yet there were only two besides myself who suffered any ill effects.

Wells, Me., Nov. 2.

[We asked our correspondent to send us a sample of this suspicious honey; but after eating quite a little of it we experienced no very bad result with the exception of a slight "gnawing" sensation. Others who tasted the honey could detect nothing wrong. We finally sent the sample to our chemist, W. A. Selser, knowing that he could probably find the trouble, if any. His interesting reply follows.—ED.]

Mr. Geo. M. Lord:—I have put the sample through my laboratory, and just completed the analysis. I find this is absolutely pure, and there is absolutely no poison whatever in the liquid honey. There is a good amount of sucrose, but not above the normal quantity allowed. So I should report it a pure sample in every way.

While there was not sufficient wax to give as complete an analysis as I should like, after separating, washing, and cleaning it from the honey and residue I saw what I would call traces of vegetable poisoning, but in very small amounts—not large enough to determine the quantity.

I had a sample which I think was analogous to this about fifteen years ago, and probably a few remarks about it may be helpful to you. A case of violent cramp and poisoning, where several parties were stricken down and kept in bed from one to three days, was reported to me in Trenton, N. J. —said to be the result of eating comb honey. I immediately went to Trenton, and, after following up several clues, found the honey was from near Hammonton, N. J. I also found upon investigation that the trouble

was caused by the wax, not the honey itself. After driving for miles through the country surrounding Hammonton, on inquiring of the different bee-keepers I found this honey had come from one source. It was gathered in the lowlands at a time when the bees were working on a plant somewhat similar to our mountain laurel. Honey gathered from the same location, although possibly not exactly from the same source or under the same conditions, has been sold and consumed since without giving any trouble.

THE A. I. ROOT CO.,

Wm. A. Selser, Man'r.

Philadelphia, Nov. 29.

COTTON AS A HONEY-PLANT.

A Fall Crop Produces More Honey than That Grown at the Regular Time.

BY D. P. HUNT.

Noticing the enquiry of D. D. Stover and your reply thereto, Nov. 1, page 676, I will say that to-day, Nov. 11, the bees are getting honey from cotton as fast as I have ever seen them gather it from any source. It is water-white and of fine flavor. About ten days ago I discovered my bees were busy, and going south from town. On investigating I found they were going to some cotton-fields about 1¼ miles distant, where there had been some pretty good showers during the latter part of August and first of September, sufficient to cause a rank second growth, and it was covered with bloom. I came back and moved one load down there, and set them out right in the field, and will carry another load to-night.

I have kept bees some 20 years; but being a druggist I have had very little time to devote to anything else; but having lost my store by fire last year I purchased some more bees and have become quite a bee crank. Last season, 1908, was the best I have ever seen; this season was the worst. Up to Aug. 20 we had hardly rain sufficient to lay the dust. All crops and even the weeds failed to grow; but cotton will stand until frost; and if it gets rain in the fall it will grow fast. I believe the fall bloom will yield more nectar than it does at its usual blooming time which is from May to July, as the long hot days seem to dry up the secretions, and, as a general thing, there is an abundance of other bloom during those months in this locality, and it would be difficult to say that you had any real cotton honey.

But there is no mistake about it in the fall, for there is absolutely nothing else to work on. I have watched the bees at work on it for hours. During the last few days they do not seem to care much about the inside of the bloom, but prefer the nectar-glands at the base of the corolla, and outside, also, on the buds or "squares."

There has been a great dearth of pollen all the season, and the bees are in great need of it. They are searching far and near for

it; but if they got any from the cotton bloom it has escaped me.

In conclusion I am sure that in any year or any locality where cotton has sufficient moisture to induce vigorous growth its bloom will yield nectar; and in the fall months, with cool nights, it will yield abundantly.

Blum, Tex.

[From various reports that have been sent in we have been led to believe that honey from cotton is of indifferent flavor. We should be glad to get reports from others.—ED.]

THE BEST PLACE FOR BAIT SECTIONS.

A Valuable Article.

BY H. E. CROWTHER.

As to the best place in a comb-honey super (corners or center) for bait sections I am inclined, after using them both ways, to do as Mr. Bevins does. He says, "Last year I put the baits in the corners; but the results were not satisfactory. Some were untouched when the rest of the super was finished, and many were left uncapped. Bees naturally begin work in the center of the supers, and that, I believe, is the best place for baits."

I think the object of bait sections is not to get the super filled out at the corners but to get work started in the super, and the corners will take care of themselves. Later, if the honey-flow amounts to any thing, and if it is poor, possibly the four-cornered super would be left empty instead of half full like the one with a good start in the center.

SHORT SPLINTS PREVENT BUCKLING.

I have had no trouble with buckling in using five-inch splints, as has Dr. Miller. I used them on both medium-brood and light-brood foundation. The frames were wired with three horizontal wires, two of which helped support the splints, and were all that are necessary, I think. I intend using, the coming season, two wires and five short splints. Combs nearly always break within two inches of the top-bar, and with four or five splints reaching well below this weak place and supported by the wires very few combs will ever break; and splints of this length are much easier to apply. I have yet to find any poor combs built over this arrangement. Of course, another season may be different; but I will try it anyhow.

Unsplinted combs that break near the top-bar will be quite well fixed up if they can be put in a strong colony upside down for a while and properly spaced; otherwise it is a waste of time to put them back at all.

EXCLUDERS DO NOT INTERFERE WITH THE STORING OF HONEY.

I would not do without excluders on extracted-honey colonies, and have not found them to be honey-excluders. If a queen goes above (that is, I mean when excluders are not used) she gradually deserts the lower hive; and the addition of another body of

empty combs on top only invites her higher up. When we come to extract, the colony is in any thing but an ideal condition, with brood scattered through the whole hive; and if the extra bodies of combs have been spaced wide they are not in the best shape for a brood-nest, even if brood were wanted here. Many of the extracting-combs we use are not suitable for brood anyhow—mainly because of drone-cells or a great plenty of sagged cells in the upper part (unsplinted combs).

The presence of drone comb in the super is not the whole cause of queens going up, for they work up just the same with all worker comb above.

DOES THE DISTANCE BEES FLY HAVE A BEARING ON THE AMOUNT OF HONEY GATHERED?

A friend of mine has a homestead three-fourths of a mile above the irrigation canal, and has 150 colonies of bees on his place.

This year his crop was about one-third as good as the average from well-cared-for bees kept below the canal among the alfalfa-fields. Has this short distance made that difference in the crop? There is nothing above the canal for the bees except a few early flowers for breeding up in the spring. His crop the year before was somewhat better. The bees, of course, get less than half a range, but I know of bees located directly on the canal with only half a range that do as well as full-range yards in the same neighborhood. Does the bare half-mile make the difference?

Will three yards of bees produce less honey if located too close together in a straight line than the same bees would if all were in the two end yards, by reason of the bees in the middle yard being handicapped by coming to the dry streak on each side, and not passing over, so losing all benefit of the range further out?

Another neighbor had a queen-mating yard seven miles back in the hills, and he says that even his nuclei carried plenty of alfalfa honey from the valley seven miles away.

Parma, Idaho.

[In answer to your question whether the bare half-mile from the forage would explain why those 150 colonies did not do better, it would seem hardly probable. If there were other yards, the bees of which were located nearer the same range, then it would be easy to see why bees further or half a mile away should not do as well. This is an interesting subject for discussion, and we hope that some of our readers in the alfalfa regions will give us data.

We should also like to get further reports on the question whether queen-excluders are also honey-excluders. The mass of evidence so far received would seem to indicate very strongly that there is no appreciable loss, and that, on the other hand, it does not pay any bee-keeper, when running for extracted honey, to let the queen have full range of the hive, supers and all.

Thus far the short splints—that is, those that do not reach to the bottom of the foundation—have given a good account of themselves. While W. Z. Hutchinson says there will be no sag if *medium brood* foundation is secured by four horizontal wires drawn taut, the facts remain that a light brood is considerably cheaper than the medium-brood sheet. Under some conditions the lightweight will buckle when the wires are drawn taut. If short splints and *light* brood foundation can be made to work satisfactorily they would effect an economy all around. We hope to get further reports on the use of splints, long or short.—ED.]

A STUDY OF NATURAL HONEY-COMB.

BY DR. C. C. MILLER.

Comb foundation is in such general use nowadays that it would be nothing strange to find bee-keepers who have never seen a frame of entirely natural comb. I have been making a study of some specimens—a dozen in number—that were built entirely at the sweet will of the bees, not even the least starter being in the case. They range in size from a piece of a few square inches to nearly a frameful.

POSITION OF CELLS.

Looking at brood foundation that I have, I find the cells placed with the angle at top and bottom.

In super foundation the angle is at each side, one of the cell-walls lying horizontally at the top and another at the bottom. I don't know why the two kinds differ.

The bees seem to copy after the first plan. Not very strictly, however. In only one case can the row of cells be said to be really in a horizontal row. In another specimen the row descends half an inch in about a foot. In the other cases the variation from the strict horizontal is still greater.

The cells run in a fairly straight row except in one frame where the line is somewhat wavy, apparently because there were four initial points of beginning, and the four parts were afterward joined together.

SIZE OF CELLS.

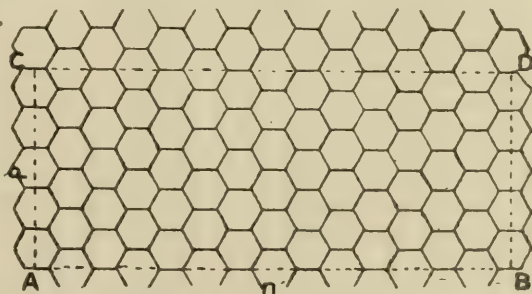
It is a common thing to say, "Worker-cells measure 5 to the inch, and there are, consequently, 25 cells on one side to the square inch," Neither of these statements is always true if we speak with any degree of accuracy. There are not always exactly 5 cells to the inch; and if there were, there would be, not 25, but $25\frac{1}{2}$ cells to the square inch. See Cheshire, Vol. I., page 176—that is, if the cells were exact hexagons. The trouble is that they vary from this quite a little. On one piece of comb, measured horizontally, the average diameter of a cell was .201087 of an inch; in one of the diagonal directions it was .19853, and in the other .20357, the total average diameter being .201062 of an inch.

Upon reading those figures some one may think that I must have had some very nice instruments with which to take measurements. I had nothing but a common pocket-rule, and after I tell you how I did it you will see that a schoolboy could easily do the same.

Suppose I want to measure the diameter of a cell. Laying the rule upon it, and measuring merely that one cell, I could only say it was somewhere between $\frac{7}{16}$ and $\frac{1}{4}$ of an inch—not very exact. But if I measure 10 cells, and then divide by 10, I can come about ten times as near the exact measurement. The larger the number of cells I take in my measurement, the nearer I can come to exactness. Well, here's the way I do. I lay the rule upon the comb, with one end of the rule exactly corresponding with one of the cell-walls. Then I look along the rule till I see some notch which corresponds with some cell-wall. Then I count the number of cells in the given distance, divide the number of inches by the number of cells, and that gives the diameter of a cell. For instance, I find a notch of the rule at a cell-wall $9\frac{1}{4}$ inches from the end of the rule. I count the cells, and find there are 46. I divide $9\frac{1}{4}$ by 46, and I have .201087 of an inch as the diameter of one cell. Easy, isn't it?

But after I have the diameter of a cell it's just a little bit of bother to figure the area of the hexagon, especially as its three diameters are not all alike. A beautifully simple way of measuring the surface of a comb is given by A. Berchon, *L'Apiculteur*, p. 228.

Take the parallelogram ABCD. The line AC passes through the middle of 5 cells. Next to this vertical row of cells is another row of 4 cells, with a half-cell at top and a half-cell at bottom, making 5 cells in the row. So there are 5 cells in each vertical row in the parallelogram. The line AB passes alternately through the middle of a cell, co-



incides with a cell-wall, then through the middle of another cell, and so on. Each end of the line stops in the middle of a cell-wall; and if you put together the two half-cells at each end, the line measures 14 cells. There being thus 5 cells in each vertical row, and 14 in each horizontal row, there must be $5 \times 14 = 70$ cells in the parallelogram.

Instead of measuring from the center of one cell-wall to the center of another cell-wall I find it more exact to let the line AB begin at an angle of a cell and end at the corresponding angle in another cell.

It may be worth while to notice that the figure, copied from *L'Apiculteur*, has the cells running the wrong way, a side of a cell being at top and bottom of each cell, whereas it should be an angle.

In one piece of comb, measured horizontally, there were 42 cells in $8\frac{1}{2}$ inches, and measured vertically there were 38 cells in $6\frac{1}{8}$ inches. Multiply 42 by 38, and $8\frac{1}{2}$ by $6\frac{1}{8}$, then divide the former product by the latter, and you have 28.076 cells to the square inch in that piece of comb. In another comb there were 26.54 cells to the square inch—quite a difference in the two combs. T. W. Cowan (*The Honey-bee*, 181), took 36 measurements, and found the diameter of a cell to range from .186 of an inch to .211. That's a much greater variation than in the two combs I have mentioned; but then, he made more measurements.

In a sheet of brood foundation I find 26.62 cells to the square inch. That's about the same as my sample with the larger cells; but it has smaller cells than some that Mr. Cowan found in natural comb. That shows it would be feasible to have foundation with larger cells, thus working toward a larger bee, if a larger bee would get more honey. Of that I have some doubt.

Marengo, Ill.

THE PRACTICAL TREATMENT OF AMERICAN AND EUROPEAN FOUL BROOD.

Some Things we Know and do Not Know about these Diseases.

BY DR. E. F. PHILLIPS.

Read at the National Bee-keepers' Association Convention, Sioux City, Iowa, Sept. 22, 23, 1909.

The subject which has been assigned to me at this time is one of the most important now before American bee-keepers; and, unfortunately, it is not very well understood by any one. Toward the end of devising proper treatment, all investigations of the cause and characteristics of bee diseases must bend if they are to be of any value to the practical bee-keeper. However much the bee-keeper may be interested in the bacteriological findings in a bee disease, these things are of less importance in his practical work; but he wants and needs careful, reliable work on treatment.

The bacteriological investigations are very important, but I shall not dwell on this point. It is, perhaps, enough to say that, until we know the cause of a disease, and can make a detailed study of that cause, we can not know just what we are fighting.

In finding methods of treatment, there are two possible ways to proceed. By repeated trials of various manipulations the practical bee-keeper may, by chance, hit on something which enables him to save his property from destruction. He may make such a lucky find without any knowledge as to what has caused the disease. It was in this way that Schirach, in the eighteenth century, found

the shaking treatment for foul brood, and since then this same treatment has been used extensively. The Schirach treatment, or, as we now call it, the shaking treatment, enables us to prevent the brood diseases from destroying our bees, and it certainly is satisfactory in the majority of cases.

The other way of investigating treatments is to find the cause of the disorder, study its characteristics, and plan manipulation in the light of knowledge gained in that way. This method of procedure, while probably the more logical way, is open to the minority; but all can take the results obtained and utilize them without any great knowledge of bacteriological technique. But such work is slow. I fear that many bee-keepers wonder why the Bureau of Entomology is not able in a short time to make positive statements concerning the causes of disease, particularly European foul brood. To tell why would be a somewhat lengthy task; but let me simply point out that, in all diseases of animals so far studied, accurate results have been obtained only by years of work, and no problem in bacteriology is an easy one. It took years to establish the cause of American foul brood, and there is still much to learn. The bee-keeping public has been victimized by too many hasty workers who jump at results on insufficient data, and we do not care to be in that class.

To illustrate the great desirability of first getting the cause, let me cite some recommended manipulations. Because carbolic acid is used quite generally as a disinfectant, it has been repeatedly recommended that a 2 per cent to 5 per cent carbolic-acid solution be used to disinfect hives in which infected colonies had lived. This was done without a knowledge of the cause of either disease; and in the case of American foul brood of which we now know the cause it is certain that a 5 per cent carbolic-acid solution will not destroy the spores of *Bacillus larvæ* in the short time taken to wash out a hive. In the case of European foul brood, of which we do not yet know the cause, we are unable to say whether the carbolic acid acts as a disinfectant or not.

In a similar manner, without knowing the cause of either disease, various authors have recommended the feeding of carbolic acid, naphthole beta, salicylic acid, and similar drugs in sugar syrup to diseased colonies. While, as suggested previously, it is possible to stumble on a method of treatment by promiscuous experimentation, we should not take these recommendations too seriously until more is known about the disease. Such recommendations are largely confined to European authors; for American bee-keepers, from sad experience, have learned to put little faith in these treatments.

It has also been recommended that various antiseptics be placed in the hive to ward off disease. One European writer, posing as the omniscient guide of the bee-keeping world, writes in a recent edition of one of his books as follows:

There are certain antiseptics such as carbolic acid,

phenyle (or creolin), izal, eucalyptus, camphor, naphthaline, etc., which evaporate at the ordinary temperature of the hive, and whose vapors, while not actually killing the bacilli, arrest their increase or growth.

When it is remembered that this is apparently recommended without any knowledge as to the cause of any brood disease, it will not be taken seriously. Surely no American bee-keeper would entertain any hope from such a treatment.

It is wise at times to cast up accounts to see where we stand. Let us look over the field of bee-disease treatment to see what we know and do not know.

We know from the experience of hundreds of bee-keepers for years past that the shaking treatment will enable the bee-keeper to keep either disease under control so that he can remain in the business and make money out of it, if the seasons permit. This treatment consists of removing all combs, honey, pollen, and brood from the colony and putting the bees on foundation, compelling them to replace their comb, rear new brood, and gather new stores. By this means the diseased material is removed, and the contaminated honey and pollen which we consider as the carrying agents are no longer available to feed to the brood. We do not know what becomes of bacteria which may be carried over in the honey in their honey-stomachs, or possibly even on the outside of their bodies. We do not know when it is safe to use full sheets of foundation and when we should use only starters. There are many other points variously surmised which are not yet settled, and we must content ourselves with the fact that, if a diseased colony is shaken from its combs to a clean hive on starters of foundation, the disease rarely reappears. Starters of foundation are here specified, largely because reports would indicate a larger percentage of successes when they are used. If all worker comb is desired, the bees may be given full sheets of foundation later.

We do not yet know just when or how it is best to shake in order to meet with the least financial loss, and this is one point which must be thoroughly investigated. Ten frames of Langstroth size will probably contain, on an average, four pounds of wax; and to shake the bees so that they will secrete this wax with the least consumption of time and stores is a problem of great importance. Probably a more important point is to devise a way by which the bee-keeper can get out of the combs all the wax in them. Our present methods of wax extraction are exceedingly crude, and we are annually losing a great deal of wax by the use of the wax-presses now commonly employed.

We do not know whether it is always necessary to disinfect the hive or not; but to be on the safe side we should continue to do it until we know that it is not necessary. Since chemical disinfectants do not promise any results for American foul brood, and since we do not know the cause of European foul brood, we can be sure of complete disinfection by burning out the hives. If this is

done carefully it does not injure the hive. In the field work of the Bureau of Entomology a blue-flame torch such as is used in removing paints has been found very satisfactory.

We do not know of any antiseptic which can be fed in syrup or given in any other manner which will cure the disease. Neither do we know of any method by which combs can be disinfected by fumigation or otherwise to insure success. Until careful bacteriological work has demonstrated the value of any such method it would be folly to put any reliance in it. Furthermore the experience of most American bee-keepers up to the present has shown that antiseptic feedings and fumigations which have been tried are not of the value attributed to them. It would, therefore, be unwise to recommend them.

The logical practical treatment for both of the diseases under discussion would, therefore, appear to be the shaking method. Until something better is devised, this is the only treatment which we can recommend. When our knowledge of the causes of the two diseases is more complete, it is to be hoped that we can find something better. It is also to be hoped that the present weak points in the shaking treatment may be strengthened by work which will give us information whereby we can decrease the expense of shaking. The main conclusion which we can draw from a study of treatment is that there is still much to learn.

So far I have discussed the subject of control from the standpoint of the individual bee-keeper. We have learned, however, that individual action is not enough, and that co-operation and outside aid are the essential points in a rational control of foul brood. Although this portion of the subject of disease work is not specifically assigned to me, I shall ask your indulgence for a few moments longer on some phases of this problem which occur to me as a result of some recent experiments of the Bureau of Entomology.

The work of the various States in providing inspection of apiaries is of great value to the bee-keeping industry, and an earnest effort should be made to have proper laws passed where they are needed. In several States such movements are now on foot. When such laws are passed, however, we can not afford to believe that the problem is settled. It has only begun, and the State inspector can not be expected to do all that remains to be done.

The element of the work in controlling disease which will require the most labor is the educational feature. It is really remarkable, after all that has been written, how many bee-keepers do not know that there are any diseases of the bee.

The first step in this work is to learn just where the diseases exist. This phase of disease work has been neglected in this country, and no concerted effort has been made to establish the necessary facts. During the summer just closing, the Bureau of Entomology made a greater effort to locate diseases; and in all, we have examined nearly

a thousand samples to get the data desired. We are not yet prepared to give our results. In doing this work we are compelled to make it a rule never to be sure whether disease exists in a given locality until a sample of diseased brood has been obtained. Furthermore, all samples were examined bacteriologically to be sure of no error in diagnosis. In the case of European foul brood this is particularly necessary, for the symptoms are not constant enough to be sure of a sample after it has been away from the hive for a time. Many reports of disease turn out to be unreliable, and this matter is too important for any suspicions to be accepted as facts. While the sending-in of these samples of various persons interested is much appreciated, it has seemed rather strange that some men who were in a position to help us materially with this enormous task have not responded as we might have wished. There may be some bee-keepers who do not want it known that they have disease in their apiaries, and, therefore, are opposed to work on distribution. It is no disgrace to have disease break out in an apiary. The only condition under which a bee-keeper may be considered remiss is when he does not treat his diseased colonies. Any man who hides disease and tries to give the impression that his bees are healthy when they are not is, to say the least, no friend to other bee-keepers. In some States he is legally worse than that.

After the distribution is learned, the next step is to get in touch with every bee-keeper in the territory where diseases exist. This is not easy. During the past summer the Bureau of Entomology has sent out something over 10,000 circulars to postmasters, asking each one to give the names of bee-keepers in his vicinity. All of the returns have not yet been received, but each report will probably average five names. The same plan could be used for a request from a government department for all the postoffices in the United States (over 60,000 in number), if necessary; but our very limited office force will not permit it. In some parts of the country we have been able to get extensive lists of bee-keepers from other sources.

After the names of bee-keepers are received, the next step should be to send out a notice to each one living in a county where either disease exists, advising him of that fact, and sending a circular on the subject so that he can become familiar with the symptoms and treatment of the disease. We have not been able as yet to do this in many cases, but hope to continue the work in the future.

I have briefly outlined this scheme, not to advertise what the Bureau of Entomology aims to do nor to make elaborate promises, but merely to indicate the fact that, if diseases are to be controlled, it will take work to bring it about. To sit by and expect an inspection law to wipe out disease is not the part of wisdom. It has never done so yet.

Nor have I indicated all that must be done. I should be very much pleased, however, if by this outline I could induce each person

interested to do his share for the furtherance of the industry. The Bureau of Entomology will continue to do what it can with the present limited funds, but it would be just as unwise to leave too much to us as it is to expect too much of an inspector.

Washington, D. C.

CASCARA AS A HONEY-PLANT.

A Good Yields in Sonora, Cal.

BY A. D. HEROLD.

The inquiry on page 677, Nov. 1, and your query regarding cascara sagrada as a honey-plant, have come to my notice. Cascara is, I may say, our main honey-plant in this locality. It is in full bloom about 20 days after apple-blossoms are gone, and lasts 25 days on an average; yet there are stray bushes near ditches or cultivated ground which send out new shoots of bloom, and these are visited by the bees until late in September or October.

I have sent you this day a sample of the extracted, which is, I should say, 95 per cent pure cascara. It is blended with spring flowers and grasses, and out with holly, so it is hard to get the full crop of pure cascara. However, we get more honey from cascara than from any other one plant in this vicinity. It is so dark as a comb honey that it is a poor seller to those who go on looks alone. We prefer it on our table to any other honey. I have customers who will take no other. It is not purgative, but one of the best remedies for chronic constipation known. I have never known any of the pure article to granulate under any conditions. Inclosed with the honey are some of the seed and leaves. It is not an evergreen, but it is as green as the bay-tree all winter, and until late in the spring. The new buds push the leaves off, and at the opening of bloom it is nearly free from leaves.

I think it would stand the winters of Ohio if protected while small. It is a rapid grower, a most prolific bloomer, producing both honey and pollen. It is just fun to see the bees working on it, the flowers are so thickly set together—shallow, and accessible to bees to work on in their great haste. In the evening they file out of their hives with pollen on their legs, eager for another load before night overtakes them—something I have never noticed when they worked on any other flora.

I think it is a great honey, and could be sold at a higher figure if properly advertised. I have had customers send it to their invalid friends in Ohio, Indiana, the Dakotas, and Pennsylvania. I had 1000 lbs. of extracted and 300 lbs. of comb from this plant, from 44 colonies, spring count.

Sonora, Cal., Nov. 8.

[If cascara honey can be used as a medicine the facts ought to be known for the benefit of the few who have need of it. It ought to command a big price.—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE NEBRASKA STATE FAIR.

The apiarian exhibit at the Nebraska State Fair this year was of unusual excellence and largely increased size, taxing the limits of the building assigned for that purpose. Seven exhibitors, representing every section of the State, crowded the shelves to the limit, and a petition has gone to the management for increased space for the coming year, as well as for premiums in new classes, which will, no doubt, be forthcoming.

The substantial special premiums offered by The A. I. Root Co. and others have stimulated competition, and the two splendid silver trophy cups given by the State fair management and the Nebraska State Beekeepers' Association, added materially to the attractiveness of the exhibit, and the zest of the competitors.

One of the largest individual exhibits was that of the Trester Supply Co., of Lincoln, the oldest exhibitors at this fair. This splendid exhibit, in point of size and general excellence, probably the best they have ever shown, reflects great credit on this concern, and won the special silver trophy cup offered by the management of the fair for general display.

The most interesting display from the point of general interest was that of Frank G. Odell, of Lincoln, representing Roselawn Apiaries. Mr. Odell showed a collection of four hundred mounted specimens of honey-producing plants, the largest ever shown at any State Fair. This list will be published by the Secretary of the State Board of Agriculture. It won the first premium in cash as well as the special first premium offered by the *Bee-keepers' Review*. Mr. Odell showed the prize-winning collection of bees and queens, securing first in all competitions, and three specials offered by The A. I. Root Co. for bees, with his showing of fifteen observatory hives and five different races of bees.

The display of beeswax and comb-honey designs was especially interesting, this concern showing a model of the Wright aeroplane made of beeswax, and the words "Roselawn" in comb honey, both of which easily won first premiums. Mr. Odell won all specials for which he entered, including a Root ball-bearing extractor, a Hatch wax-press, a copy of the A B C in German, and five pounds of Weed process foundation offered by The A. I. Root Co., besides the largest individual winnings of cash premiums of any exhibitor in the department.

This exhibitor also gave two lectures daily on economic apiculture, with demonstrations with live bees in a cage, being especially employed by the management of the fair for that purpose. These lectures were attended by great crowds who listened eagerly to the attractive side of bee-keeping as presented by the lecturer.

A special honorary diploma was awarded by the fair management to Mr. Odell as expressive of their appreciation of his labors.

Lincoln, Neb.

G. M. PLUMB.

SHALL WE SHAKE THE QUEEN IN PRACTICING "SHOOK SWARMING"?

In the A B C and X Y Z the Doolittle method of preventing swarming is treated on p. 416, but I do not see where any thing is said as to how the queen is transferred from the old hive to the new unless it is intended to "shake" her off with the rest of the bees and allow her to find her way into the new hive with the others; but in all I have heretofore seen relative to the handling of queens there is so much caution advised, for fear of doing her some injury, that this seems like rather rough treatment for so delicate a character.

Greenville, Miss., Dec. 9.

N. B. JOHNSTON.

[When we speak of shaken or "shook" swarms we seldom make any reference to the queen, leaving the matter of how the queen gets into the hive at the option of the apiarist. Probably there would not be one time in three or four hundred colonies shaken where the queen would be lost if the bees were shaken in front of the entrance without paying any attention to the queen. There is a possibility, however, that she might be injured if she were in the height of her egg-laying; but as she will fall, in almost every case, with a bunch of bees she would receive no harm. As a general practice we might say it would be advisable to pull out the first two or three frames, and, after the queen is located, set the frame she is on to one side; shake all the other frames in front of the entrance

then, last of all, take the queen off the frame and place her among the bees that are running in, after which shake the frame. But if there is a large mass of bees on the ground in front of the hive it would do no harm to shake bees, queen, and all.

On the other hand, there is a slight objection to the apiarist picking up the queen and handling her at all. The contact of the human fingers sometimes changes her body odor to an extent that will cause the bees to attack her. It would, therefore, be our candid opinion that there would be no more loss in shaking without paying any attention to where the queen was in the hive than if we take the time to hunt her up, pick her off the comb, and let her run in with the bees.—ED.]

AN APIARY DESTROYED BY FLOOD.

One of the worst storms in the history of this section occurred Sept. 20, lasting more than 24 hours. It did great damage to property and life. We have a large body of water in our front, the Mississippi River, and a big lake at our rear. The wind backed up the lake water, placing mine water, and submerging land that has heretofore been free from overflow. One of my apiaries of 75 or 80 hives, in prime condition for wintering, has been completely destroyed. The water is yet on the land; and as there are snakes in and around, it is any thing but pleasant to work gathering up the boxes and combs.

I have a few hives at my home, mostly nuclei, and I doubt if I can carry them through winter. The apiary that was lost gave me all the extracted I got this year, so I have nothing to look to next year. It took 20 to 25 years to build up and 24 hours to destroy. That knocks the grit out of the best of us.

New Orleans, La., Oct. 11.

G. P. HOWELL.

[We were very sorry to learn of your loss through flood; but we would draw your attention to the fact that you can make very rapid increase with these combs and hives, and you will probably find that the combs themselves are not very badly damaged. It was Mr. Adam Grimm, who, along in the early '60's, made enough money out of his bees to establish a bank. When asked what he would do if he would lose all of his bees during the winter he said, "I would show you how quickly I could get them back again with all these drawn combs and hives." The fact of the matter is, one can make a very rapid increase when he has the full equipment, and this you undoubtedly have. If the combs happen to be filled with mud or dirt, take a hose and wash them out with a spray of water as best you can, then give them to the bees as fast as they can take them.—ED.]

ABSORBENT CUSHIONS BEST FOR DAMP WINTERS; WHY BEES CLUSTER TOWARD THE FRONT OF THE HIVE.

On page 654, Nov. 1, the editor refers to the difference of experiences and opinions respecting the top covering for outside-wintering bees, and seems inclined toward tight or sealed covers. Always having wintered my bees outside, it has been my practice to use porous packing over the frames, and with most excellent results so far as the packing is concerned, excepting in a single instance, if I remember rightly. The material used has been dry planer shavings. The exception was the use of a sack of sawdust about 6 inches thick, very closely packed over one of the strongest colonies. They came out in the spring in very bad condition because of moisture in the hive. I thought that possibly the cover might have leaked, but found this not the case. The under side of the sack was wet as well as the hive; hence the conclusion that it was the closeness of the packing.

It occurs to me that, in a dry atmosphere, bees might be wintered safely outside under a sealed cover; but in a winter of very much moisture a porous covering of proper material, such as planer shavings or ground cork, which might be better, would, it seems to me, be the proper material to use. There is another factor to be reckoned with in my case, perhaps. The covers are four to six inches above the packing, thus leaving a dead-air space above the cushion, which I deem very desirable in outside wintering.

In reply to a correspondent who asks why bees cluster in the front part of the hive, like Dr. Miller, you frankly say, "I don't know." Permit me to suggest a reason for bees doing this. During the summer time, when brood-rearing is going on, there is a tendency to put the brood forward and the honey at the back and above. This is partly owing to the fact, I think, that the wind blowing into the hive in early spring when brood-rearing commences strikes across the hive under the frames, then rises, making it more dif-

ficult to maintain an even temperature than at the front, and this may account for bees doing the same thing during cold weather. Hives being placed fronting either east or south, the warmth of the sun has likely something to do in attracting the cluster in the winter toward the front of the hive, especially in the single-walled hive. WM. M. WHITNEY.

Batavia, Ill., Nov. 17.

SOME OLD SECTIONAL BEE-HIVES OF A CENTURY AGO.

In looking over some of my old books I found an encyclopedia, published in 1821. It has about 15 pages devoted to bees and hives, and is quite interesting. There is a cut of a divisible hive very much like those of to-day except in shape, being square, with fixed straight bars instead of movable frames. It tells how to make artificial swarms with this hive, very much as we do to-day, and quite a lot of queer ideas in regard to bees. F. T. BROOKE.

Staunton, Va., Nov. 22.

[The article to which you refer is possibly a description of what is known as the Nadir or Eke hives that were used in Europe some hundred years ago, and, in fact, are still in use. This whole system has been written up in our columns at numerous times. If you will read over the article carefully you will probably find either one of the names referred to. That old system was very similar in many respects to the divisible-brood-chamber hive that is in use to-day, with this difference, that the combs in each section were immovable; but the manner of handling the sections was somewhat similar to that used with the present hives.]

By turning to page 247 of the latest edition of our A B C and X Y Z of Bee Culture you will find also a description of what is known as the Stewarton hive of 1819. This had bars for supporting the combs with glass strips between. It was also described in Cheshire. It is possible that the Stewarton hive is the one that is described. It is eight-sided, split up in sections.—ED.]

BEEES IN WASHINGTON COULD WORK EVERY DAY IN THE SEASON IF THE WEATHER CONDITIONS WERE MORE SUITABLE.

We are located in the southern part of Washington, in the foothills of the Cascades, on the western slope. It is an ideal place for bees so far as honey-producing plants are concerned; but, of course, the weather conditions are not always ideal. We have a great deal of rain here, and last season there was too much cool and cloudy weather during the time for a honey-flow, so that the nectar was not properly developed in the flowers, and consequently the crop was almost a failure. The honey-bearing flowers come on in this order: Willow, vine maple, which bears an abundance of nectar; wild blackberry, wild vetch, salad berry (a good honey-bearer in its season); then the famous fireweed. So you see we would have a continuous honey-flow from April 1st until Sept. 1st provided the weather conditions were right.

The fireweed honey is delicious, very white, and of fine flavor. It ranks first in market here, and I believe it would the world over.

During the season of 1908 we had 40 hives of bees,

and sold \$700 worth of honey. At the present time we have 55 hives in fine condition for winter, and we are building great hopes for another season.

We do not put our hives in winter storage here. They do very well when left out in the open.

Brush Prairie, Wash., Nov. 20. MRS. D. N. BRACK.

DISPOSING OF LAYING WORKERS BY TEMPORARILY UNITING THE COLONY WITH A STRONG QUEEN-RIGHT COLONY.

On page 674 is given a quick way of ridding a hive of laying workers. For many years I have practiced a much quicker way. It rests on the assumption that a queen-right colony will not tolerate the presence of fertile workers. The hive to be treated is placed late in the evening quietly, and, if possible, without smoking, over a strong queen-right colony whose supers have bees removed for this purpose. After the two colonies are thus united, the supers are replaced on top of all. Next morning the hives are separated, and, if thought best, made to exchange stands. Late in the evening of the same day the smoker is filled with sassafras chips, and a queen run in. In this temporary union the queen-right colony should always be the under hive for the safety of the queen.

Otterville, Mo., Nov. 18.

E. W. DIFENDORF.

GOOD PRICES SECURED BY SELLING HONEY EARLY.

By getting my crop before the honey-eating public at an early date I have found that it pays well, for I get 17½ cents per section for all my comb honey, and \$2.00 per gallon for my extracted honey in glasses. The demand is heavy, for I sell direct to the consumers and not to the merchants.

The merchants in the grocery business are often to blame for poor sales, as they sometimes store fine comb honey in dark damp cellars, near pickled meats, fish, cheese, etc., and the customer complains about the bad flavor. I believe all producers should caution grocers against storing honey in the cellars and against handling it carelessly, as this accounts for so much breakage, and the honey comes in contact with dirt and dust. Chico, Cal.

SYLVIVS J. MORRISON.

NEW YORK SERGEANT OF POLICE IN CARTOON.

Mr. E. R. Root—Herewith find inclosed a cartoon of myself which I received from some unknown source, and which I consider clever enough to be reproduced in GLEANINGS. I am the son of Mr. N. D. West, bee-inspector of New York State, and you will remember me as the boy who showed you through his apiary when you were on a bicycle trip through Schoharie Co. in 1890. I was appointed a patrolman in New York by President Roosevelt when he was Police Commissioner here. I am now sergeant of mounted police, and continue the bee business on a small scale in New York. The cartoon is supposed to represent me in police uniform looking at my bees. You will note in the cartoon that the queen wears a crown, and that I, farmerlike, have a straw in my mouth.

EDWIN H. WEST.



WHAT STYLE OF HIVE TO ADOPT.

1. Would there be any advantage in locating an apiary on a hill from which one could see the surrounding country for several miles?
 2. What make of hive would you recommend in the out-apiary, for extracted honey?
 3. The most successful bee-keeper I know uses the eight-frame hives, and tiers them up. I have started that way. Would you advise me to change, as I intend to go into the business more extensively?
 4. Which do you think better—deep or shallow extracting-frames?
 5. On page 695 J. E. Hand says, "raise up the whole hive and place a super of empty combs under it." Why wouldn't it be better to put this super of empty combs on top of the brood-chamber instead of under it, as the queen's natural instinct is to go up?
- In this section the first surplus honey comes from basswood, about July 10, and we have a good fall flow.
Elk River, Minn., Nov. 23. FRANK MORGAN.

[1. In some localities, we believe it is a distinct advantage to have an apiary located on a sidehill commanding a view of the valley and the hills beyond. The late E. W. Alexander claimed that one reason why he was able to have 800 or 900 hives in one locality was because his bees could see the white patches of buckwheat several miles away. He believed that bees have a sort of telescopic vision, and that, when they can see the white patches, they will go further for honey than they would were the view shut off by buildings or shrubbery or trees. Of course, one might argue that the bees could fly high enough to look over every thing. But they will not do so if they can avoid it. Bees going to and coming from the fields always fly as low as possible, rising only enough to clear obstructions.

2. That depends on the man and conditions. Generally speaking we would advise the ten-frame hive rather than the eight-frame for extracting, for the average farmer or bee-keeper. If one has made a special study of the sectional or double-brood-chamber hive we would advise the shallow extracting-super. J. E. Hand, Louis H. Scholl, and some others consider this the best for extracting. The main advantage is that the storage room can be more gradually increased.

3. If you have started with the eight-frame hive we would advise you to stick to it. The gain would not be enough to warrant the change.

5. This question is referred to J. E. Hand for reply.—ED.]

DETERMINING WHETHER A COLONY IS QUEENLESS BY THE PITCH OF THE HUM OF THE BEES; LOCATING THE FRAME CONTAINING THE QUEEN BY SOUND.

On page 192, April 1, is a quotation from Mr. F. J. Miller on finding the queen by the lowness of pitch of the note made by the bees. This is a very interesting thing; but it requires an educated ear. As I have been a violin-player for something over 20 years my ear is very correct. My experiments this summer would indicate that not only will this low-toned hum tell where the queen is, but whether the colony has a laying queen or not. I could not make a nucleus formed with queen-cells produce this tone until the queen had begun to lay, and I have not yet failed to make a queen-right colony produce it. If you will blow a little smoke in at the entrance, and tap the side of the hive three or four times lightly, then take off the cover as quickly and quietly as possible, listen carefully, and note the point where this low tone starts, you will find the queen right at that point. It is seldom that one can locate this point closer than the space between two frames; but it has been my experience that, if these two frames are taken out, the queen is pretty sure to be on one of them. It seems to me that if this method of telling whether there is a laying queen or not will always work, it is a good one—no opening of the hive, no taking-out of frames for examination. Just smoke the entrance a little, and tap the side. If they sing low, all right. If they just buzz they need attention. P. W. RICHARDS.

Mast Yard, N. H., Nov. 6.

It is well known that a queenless colony, when disturbed, will give off a roar or hum of distress. Some colonies not queenless, under a state of excitement will give off the same noise. As a rule, any queen-right colony should give off a very low and contented hum, but we doubt whether the average bee-keeper, at least, would be able to determine the approximate location of the queen by the method you describe; but it is a fact that bees will sometimes indicate her position by their general behavior; but when the hive is

opened, and a little smoke is blown over the frame, the natural status of the colony is so changed that ordinarily we can not tell, for the moment at least, in what part of the hive the queen is.—ED.]

FOLDED PAPER INSTEAD OF CHAFF TRAY.

I see that you are on the right track on wintering your bees on summer stands with the deep telescope cover. But you do not need that tray on top, or at least I do not out here. I have wintered my bees the last ten years with a deep telescope cover with paper laid on top of the super cover (sealed down), the paper reaching down on the sides and ends, some with old carpet on, but mostly newspapers. I have not lost a single colony.

The space under the frames is $\frac{3}{4}$ inch. I take a strip or block that reaches clear across the entrance, and cut out a notch $\frac{3}{8} \times 6$ inches, and lay that in front, leaving the entrance $\frac{3}{8} \times 6$ in. Another thing, I have never had an entrance clog with dead bees nor had to clean dead bees out; but in the spring I lift the hives off the bottom-boards and clean the cuttings of the comb out. This is the best way and the only way to winter bees. H. MANSPERGER.

Lewistown, Mo., Nov. 22.

TO PREVENT BEES FROM FLYING OUT OF THE ALEXANDER FEEDERS WHEN THE SYRUP IS POURED IN.

In your issue for Oct. 1, p. 611, Mr. H. A. Moody gives his plan for keeping bees from rushing out when using the Alexander feeder. My plan is this: Bore a $\frac{3}{4}$ -inch hole about the middle of the feeder-cover. Lay a small block over the hole and drive a small nail through one corner of the block into the cover to make a hinge for the block to swing on. Provide a funnel to fit the hole, and a cup that holds the amount you wish to feed. With the end of the funnel push the block around out of the way, sliding the funnel over and into the hole as you do so, and pour in the feed. Not a bee need escape.

Beresford, Fla., Nov. 4.

C. S. GAILBREATH.

BEE-SHED MADE OF BALED HAY.

Would you please advise me whether a bee-house laid up of baled hay would be warm enough in this locality to winter bees successfully?

Forest City, Iowa, Dec. 3.

RUFUS R. WAGNER.

[We have had no experience with bee-houses built of baled hay, and we do not feel competent to advise in regard to the matter. It would seem, however, that such a building should be warm enough, providing the cracks between the bales, etc., could be kept covered up.—ED.]

THE FLOUR METHOD OF INTRODUCING A FAILURE.

I have tried the flour method of introducing queens time and again, and not in a single instance have I been successful. I could not decide to give the plan up, as I realized that, if I could but learn to manipulate it successfully, it would be of great value to me as I intend to install a great many queens next spring. I should like very much to know what Dr. C. C. Miller thinks of the plan. J. B. MARSHALL.

Big Bend, La., Nov. 25.

THE FLOUR METHOD OF INTRODUCING QUEENS NOT A SUCCESS.

I tried this plan of introducing, but without success. The bees and queen get busy with the flour, so there is no notice taken of the new queen at first; but in every case as soon as they get rid of the flour they balled the queen.

Merino, Col., Nov. 22.

T. J. LANDRUM.

HONEY FROSTING.

Here is a good plan to make honey more suitable for those who can not eat it ordinarily. Boil some comb honey, or, better, extracted, until it is crisp when cooled. Dip in and well cover any plain or fancy crackers, and when cool they are fit to serve.

Seabright, N. J.

HERBERT S. HALE.

SEALED COVERS UNDER GROUND CORK.

I use sealed covers with a super on top filled with ground cork, such as grapes are shipped in from Italy, etc. Dampness in the hive is thus reduced to a minimum, and the bees winter well.

Philadelphia, Pa., March 28.

R. P. ZEBLEY.

OUR HOMES

By A. I. Root

Every man that striveth for the mastery is temperate in all things.—I. COR. 9:25.

WHAT SHALL WE EAT TO "KEEP WELL AND LIVE LONG"?

It rejoices my heart just now to see how the pages of our magazines and other periodicals are gladly thrown open to let Horace Fletcher tell us of his discoveries in the way of simple diet. Much good is certainly coming from it. The trouble is, that so many are unwilling to give up the old way and adopt the new. But a wave of reform is fast spreading over the whole wide world; the need of reform seems to be more appreciated just now than ever before since the world began. Somebody has suggested that, a few years ago, the flag that waves over the United States was saved from being trampled in the dust by the patriotism and self-sacrifice of the North; but in God's wonderful providence it seems now as if the tables were being turned, and that the *South* were now about to take the lead and teach the North some wholesome lessons. The North, years ago, took the lead in abolishing slavery; but just now the South is, without doubt, taking the lead in abolishing, if not a greater evil, one just as great. The tyranny and dominion of strong drink and the liquor forces die so hard that it looks very much as if troops and soldiers would have to be called out to enforce our just and righteous laws. In Atlantic City we have recently had an illustration of this. Now, while it seems as if the influence of every man and woman, and perhaps of the children too, is needed to preserve and enforce our laws, it seems to be more and more evident every day that every man, woman, and *child* should be exhorted as never before to rule his own appetites and other low passions. May God be praised that President Taft had the grace and courage to decline to take a glass of mint julep that was prepared especially to give him a hospitable welcome. We are told that he smelled of the mint, and probably admired its aroma; but he set the glass down without even tasting the intoxicating beverage.

Now, the success of Fletcher's and Terry's teachings depends on self-control. When you have discovered that certain things disturb your digestion, let them alone, no matter how much the effort costs you. I am often tempted to taste of apples, grapes, and other fruit between meals; but I have learned by experience that bad results are sure to follow; but if I go and get a drink of nice cool boiled water, which I always keep on hand, the longing for fruit soon passes away. Of course, I can not prescribe for other people; but it is certainly very much better for myself to take nothing in my mouth but pure water except at meal time. In the same way, I am tempted, like other people, to have a piece of pie or dessert when it is offered me after I have already eaten as

much as is good for me. When you are visiting, and you have reason to think the good housewife has prepared a little something extra, perhaps because of your presence, it seems almost uncivil to refuse to taste pie, ice-cream, or other desserts; but I am sure it is best. My strength holds out ever so much better when I pleasantly tell the good friends who have invited me that I have made an excellent dinner, and have already partaken of all that is good for me. These things, as I have said, require the exercise of self-control over the appetite, and other things in the same way. Let your motto be, not what you *want* or *greatly desire*, but what is *best* for you. Let *duty*, not *inclination*, decide the matter. Terry has told us that it is sometimes necessary for him to exercise self-control in order to stick to his uncooked wheat when there are so many other things round about him in such profusion. But he got back his health and a robustness of mind and body beyond what falls to the lot of common mortals by exercising self-control, and eating that which he knows from past experience is best for his health. After he has for quite a period exercised this self-control he tells us that he enjoys the uncooked food more than he ever enjoyed eating any thing before in his life. I think he is recognizing, however, that no two of us require exactly the same kind of diet. Some of his followers are eating common wheat just as it grows on the farm; but they cook the wheat in a corn-popper or parch it slightly, then grind it in a little cheap mill, and eat it that way. For variety they sometimes add a small proportion of popcorn. And, by the way, I have found that popcorn is a very wholesome food, especially if it is put through a little mill, and then eaten with milk. Fletcher tells us that, when he performs his great athletic feats, he eats nothing but a cereal and milk, and a little lump of maple sugar. I am well satisfied that maple sugar is more wholesome than the refined sugars in common use. Fletcher says it does not make so much difference what cereal you use, providing it is thoroughly chewed. By the way, some people think that eating slowly means chewing slowly. Not so. Fletcher says that he chews just as fast as he can make his jaws go, especially when in a hurry. Get every thing into a liquid state, or semi-liquid, before swallowing it.* If your

*In the last issue of the *Practical Farmer*, Terry tells us more about that Quaker City mill No. 4 that they use to grind their graham flour and other things. The mill cost all together \$3.80. The address of the company is A. D. Straub & Co., 3739 Filbert St., Phila.

By the way, you are probably reading up about that terrible disease called "pellagra." Well, *McClure's Magazine* says it is caused principally by moldy corn that is used to make corn meal. Sometimes some millers purposely put in a little moldy corn to get it off their hands. They think the quantity is so small that nobody will notice it, and that it will do no harm. And it is well known that it is almost impossible to get genuine graham flour on the market. Millers and middlemen seem to think they can dump almost "any old thing" into graham flour, and it will be all right. The remedy for this terribly bad business is to get one of these little mills and make your own corn meal and graham flour from the best corn and wheat of your own selection.

teeth are poor, the little mills that you use in the home, described by Terry, are an excellent aid. He uses them for grinding nuts as well as wheat and other things. It is all right to assist the teeth in every way you can; and I think a little cooking—at least many times—not only assists the teeth, but renders the food more nourishing.

Fletcher differs from Terry in saying one may eat whatever the appetite calls for particularly. In other words, let nature decide, as far as you can conveniently, what she wants to make a balanced ration. Terry makes a balanced ration of wheat, fruit, and nuts; and, if I am correct, Fletcher, especially since his repeated visits at the Battle Creek sanitarium, is leaning toward an exclusively vegetable diet. Somebody has suggested that his directions, to take whatever the appetite craves most, might include beer and even whisky; but you all know that Fletcher never intended to say any thing of that kind.

Now, I want to bring in another one of my "discoveries;" but let me digress a little before I do it.

There is now a great craze to know how to feed poultry so as to get the most eggs; and most of us have discovered, I think, that a change of diet helps to make the biddies contented and happy, and, as a consequence, bring more eggs in exchange for the food provided. Let me suggest that you make an experiment. Teach your fowls to eat lettuce if they have not already learned to do so; and, finally, give them all they want, no matter if it does cost something; and if it does not immediately increase the number of eggs I shall be much mistaken. After they become a little tired of the lettuce, cook up some cull beans and mix them with bran middlings or meal so as to get them started on a bean diet. You will soon find that the beans, in a like manner, give an increase in the egg output. Then try lean meat or ground bones. Do not give them too much at once, but accustom them to the new diet gradually. This meat diet almost always produces a marked result; and all three of these different foods are equally beneficial in growing chickens. When I was on the island a large brood of chickens were chirping around as if they wanted something they did not have. I finally concluded they wanted animal food, and gave them all the fresh fish they would eat. They were just crazy for it; and after they had eaten enough the whole thirty or forty went and sat in a row on a log. Their natural craving was satisfied, and they were contented and happy; and since that time I have seen my chickens do the same thing here in Ohio. When they seem to be uneasy and dissatisfied, try different things. When you hit the spot you will see your chicks go and roost on the fence or on a log, in a long row, contented and happy. Nature has been satisfied. When they do this they will grow and keep well.

Now, I hope our vegetarian brothers and sisters will excuse me if I suggest that, so far as my experience goes, we "humans"

are much like the chickens. It looks to me as if there were times when growing children and elderly people need animal food just as the chickens do. There may be, however, some substitute that will answer equally well; my discovery comes in right here. Mrs. Root complains sometimes that I do not eat the things I have been calling for all along after she has got them all ready for me. For instance, for quite a time I thought that shredded biscuit was just the thing; and I was not satisfied unless I had it at every meal. Finally I "switched off" on to the Battle Creek graham crackers, and I almost lived on them. (It occurs to me right here that one of our children said to somebody a little time ago that I almost "lived on" apples, and if you were to see me eating a great plateful every evening when looking over my agricultural papers you might think that apples were the "chief part of my diet.") Well, after I had been on the graham crackers about so long I took a start on puffed wheat, and it was puffed wheat and nothing else, three times a day. After that I took a great fancy to hulled corn—you know I told you about the hulled corn. Well, all of these things did me good. The change did me good. It gave me new vigor, almost as well as new strength of body; but three or four weeks ago, in some way I did not hold out, either in mental or physical strength, and I have had an increased amount of mental work lately in order to prepare for my trip to Florida. Evidently, nature was admonishing me, just as she admonished the chickens, that *something* was lacking. I tried my Hamburg steak, and it helped me somewhat; but my vigor and enthusiasm did not hold out clear up to the next meal as I wanted them to do. Just then I saw a lot of nice chestnuts in a grocery, for "chestnut time" had come. They were 25 cents a quart; but even at that price the expense was nothing compared with what people pay for stuff in bottles at the drugstore. I have often explained that apples are my medicine, and I still consider them one of the very *best* medicines in the world. Well, I bought two quarts of these chestnuts and put them in a pan in the oven in order to "cremate" the "live things" that might be inside of some of them. They were left over a slow fire until they were just right. At supper time I said, "Sue, there has been some discussion as to what kind of food is the most delicious that God ever furnished to his children. I think now that I shall put roasted chestnuts at the very top of the list."

After a few days of having a good-sized handful of chestnuts at the close of every meal, I can add that not only were they the most delicious food I ever tasted, but they seem to be, in my case, a most strength-giving food. I dictate and answer my letters with more energy and zeal than I have before for many years; and I feel more like running a race with the boys, and climbing the ladders to get to the top of that great warehouse where they are just now putting on a cement roof after having put in two

floors below, entirely of cement, without a supporting timber in the whole structure, or any thing that can burn and let the building down in case a fire should start inside.

It looks to me just now as if the chestnuts were not only a substitute for the meat I have been in the habit of using, but perhaps better than meat—yes, a good deal better; and this comes exactly in line with what Terry has been trying to teach—that the various nuts that can now be purchased in the market may supply the elements that make up a balanced ration without using any meat at all. If you can enjoy them as much as I do you can certainly thank God for the nuts; and it looks as if there might be *several* reasons for so doing, instead of one.

Now, friends, there are fierce passions that assail every one of us—more fierce by far than the appetite for something to eat or drink; and, what is of equal importance (I do not know but I should say of *more* importance) we should be evenly balanced and well *spiritually* as well as physically. The loving Father has laid the responsibility on all of us to hold these passions in check; and we can not be at all worthy of being called a creation in his own image unless we do exercise this self-control. Sometimes we are inclined to think it is “pretty tough” to be obliged to put up with our environments when others have so many things, and seem to do as they please. But remember the promise, “He that is faithful in few things shall be made ruler over many things.” It may seem to you that your life is rather monotonous, and that you are having a hard time of it. But do not be in a hurry. Study God’s holy word; come to him often and tell him your troubles, and ask him to guide your footsteps, and you will surely have your reward.

TEMPERANCE.

There are two particular things I am very much in sympathy with—the present war against the liquor-traffic and the speedy “expose” of all swindles and humbugs on an honest and unsuspecting public. Now let me explain that, while I am heart and soul in favor of prohibition, I am not at present a member of the political Prohibition party. God seems to have called *me*, at least just now, toward pushing and helping the Anti-saloon League. Nevertheless, I wish every one of you would send for a sample copy, if nothing more, of the *National Prohibitionist* (of Chicago) and see what it is doing to show up the outrageous humbugs and frauds of the liquor people of the present time. I wish especially you could all see the “cold-chiselled facts” furnished by the department at Washington, D. C., as given in the *Prohibitionist* of Nov. 25th. Editor Ferguson may not *always* be exactly right; but he is *tremendously* correct this time, and may God be praised that the manufacture of liquors is falling off.

HIGH-PRESSURE GARDENING

By A. I. Root

THE WONDERBERRY, AGAIN; A LETTER FROM JOHN LEWIS CHILDS.

Mr. A. I. Root—I notice in your issue for Nov. 15 that you say editorially that the wonderberry was not created by Mr. Burbank, and that it was already known as the “garden huckleberry.” I do not suppose you wish to make any misstatements, and will, therefore, be glad to be corrected; and I would say that Mr. Burbank *did* create the wonderberry, which is a hybrid between two species of *Solanum*. I do not think anybody doubts that. It is entirely different from the garden huckleberry or the wild nightshade, which you must know if you have grown the two and compared them. It had never been grown anywhere before Mr. Burbank originated it, and I introduced it last year, notwithstanding all reports to the contrary.

I have run down every claim from any part of the country that has been made that the wonderberry was growing there wild or otherwise, and I found in every case that it was an entirely different plant.

My reputation as a seedsman is worth more than any thing I could make out of the wonderberry or a dozen novelties like it; and it is not idle talk when I tell you positively from my own knowledge that the wonderberry is a new, distinct, and very valuable fruit.

JOHN LEWIS CHILDS.

Floral Park, N. Y., Nov. 29, 1909.

We are certainly glad to get and give place to the above letter; but I would beg leave to suggest that this matter is not to be settled by Dr. Britton, the botanical gardens, nor even Dr. Galloway (of the Bureau of Plant Industry of the United States), but by the great public who have purchased seeds and grown the plants. In answer to our call, and that of the *Rural New-Yorker*, great numbers of reports have come in, and berries and plants have been mailed us grown from the seeds purchased of Childs. Now, please note. These berries and plants from the *wonderberry* seeds have produced, I might almost say, quite a *variety* of plants and *berries*—some blue, some black, some large, some small, etc., all the way from the wild nightshade to the garden huckleberry. See Galloway’s letter, already given in GLEANINGS, p. 585, Sept. 15. Childs says in his letter given above, “It has never been grown anywhere before;” but what does the great public say (through GLEANINGS and the *Rural*), from north, south, east, and west? Again, Childs says, “Burbank originated it,” and both Childs and Burbank advertised it as a *new thing*; but has this same great public agreed that it was *not known before*?

At least *some* of the seeds Childs sent out produced the old well-known garden huckleberry.

If the general verdict of the great public at large who have purchased seeds of the wonderberry of friend Childs is that they have found it a *new* fruit not known to them before, I humbly beg pardon of both Childs and Burbank.

I know how customary it is for seedsmen introducing novelties to exaggerate, and, perhaps, thoughtlessly misrepresent. May God help me that, after my past years of experience, I may be more careful in every way lest I use extravagant expressions.

GLEANINGS IN BEE CULTURE

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EDITORIAL

By E. R. ROOT.

IN view of the fact that A. I. Root, in his Florida home, where he goes for rest and recreation, has no stenographer, all correspondence relating to bees and general business, and all other matter except that requiring his special attention, should be sent to the A. I. Root Co., at Medina. Mr. Root, Sr., has paid comparatively little attention to bees since his elder son, the writer, took practical editorial charge of the journal 24 years ago last December. While A. I. R. did not at that time drop all connection with apicultural writing he gradually let go; and now, and for many years back, all matters relating to bees and bee-keeping are taken care of by his sons. All matters relating to the Home talks and special agricultural subjects may be referred to Mr. Root at Bradentown, Florida; but the reader should remember that, owing to the lack of facilities for taking care of correspondence, his replies, if any, will have to be very brief or answered in GLEANINGS. It would be a physical impossibility for him to reply to all the kind friends who have written him. If they wish him to continue the writing of those Home papers they should spare him all the letter-writing they can.

THE FUTURE OF CHUNK HONEY.

IN the January issue of *The Bee-keeper's Review* there are two articles on the subject of bulk comb honey, or chunk honey, as it is called in the South. Mr. J. J. Wilder, of Georgia, tells of its merits, both as regards production and selling. Following this article is one by M. P. Cady, of Wisconsin, showing why chunk honey does not meet with favor in the North. As a reflection, after looking over these two opinions, we may say that we believe our Southern bee-keepers do not realize that the condition of the honey market in the North is such that the sale of chunk honey is much more difficult than in the South, and that our Northern bee-keepers, who possibly have not paid enough attention to this branch of the industry, do not realize that the public will not accept chunk honey in large quantities at the start, but that the sales must be stimulated by careful and painstaking efforts on the

part of the producer or the salesman. There is no question that chunk honey can be more cheaply produced than comb honey, and there are many other advantages attendant upon its production, such as the easier control of swarming, the smaller amount of labor required, etc. However, the experience of such a man as Mr. Cady, who, we think, gave the production of chunk honey a fair trial, should not be overlooked. The following, in Mr. Cady's own words, is a part of the description of his experiment and its result, as given on page 17 of the *Review*.

In order to test thoroughly the desirability of chunk honey, and at the same time to develop a market for the new product, a good salesman was employed to solicit orders direct from the consumers. A fine sample in a flint-glass pail was used in securing orders. The salesman explained the superior money value of the chunk honey, and, being a silver-tongued hustler, he made sales very readily at 12½ cents per lb., at the same time selling, to those who preferred, extracted honey at 10 cents and section honey at 15. However, most of the sales were chunk honey.

While the immediate results were very satisfactory, the final results were disappointing. An occasional patron was pleased with the chunk honey; but more than nine-tenths of the purchasers were emphatic in expressing their preference for either extracted or section honey; and, finding it impossible to make sales of the chunk honey, I was obliged to discontinue its production. On the part of the consumers there were three principal objections to chunk honey, as follows:

1. Its mussy condition—being much more so than either straight extracted or comb honey.
2. The flavor of the bulk comb honey was not equal to that of section honey—presumably due to the coating of extracted honey, as in many cases the comb honey in the chunk-honey packages was cut directly from sections that were nearly filled.
3. Candying of the extracted honey in the chunk-honey packages spoiled the comb honey for table use. An effort to liquefy the candied honey melted the combs, and the resulting mixture of honey and beeswax was a rather disgusting mess to the purchaser who had listened to the salesman's honeyed words in praise of his "pails of fancy comb honey chinked with the finest comb-free honey;" for when the smiling salesman again took the field the sentiment in regard to chunk honey was this:
"Throw physic (chunk honey) to the dogs. I'll none of it."

It may be said by the chunk-honey advocates that the foregoing objections are not good; but they were good enough to cause my customers to call for either comb or extracted honey in almost every instance, much to my regret and financial loss, as I had procured a special outfit for comb-honey production.

SHAKING OR BRUSHING TO CURE FOUL BROOD.

A CORRESPONDENT thinks we are inconsistent when we advise shaking to cure foul brood, and in another place recommend shaking and brushing, or brushing only. In the former case we have used the term "shaking" as indicating a *general* method of cure that involves both shaking and brush-

ing. For the benefit of some who might be misled we will endeavor hereafter to use the terms shaking and brushing, because it is doubtless true that some would shake combs containing raw nectar when they ought to brush.

THE MOTH-WORM AND ITS WORK; A DISAPPEARING PEST IN AMERICA.

THE half-tone reproduction on page 47 of this issue is a splendid illustration of the work of the wax-worm. These nasty creatures not only soil up parts of the hive and the combs with their webs, but leave their dirt scattered all over every thing. What is more, they seem to have the power to gnaw or furrow into wood as a careful scrutiny of the illustration will show. Very fortunately, however, the pest is fast becoming unknown in the United States. The introduction of Italian bees, and even their crosses with the black bees, is responsible for this. If we could only speak as confidently of the elimination of the brood diseases, the American bee-keeper would have but little to fear from any thing but winter losses.

BEEES AND NEIGHBORS.

EVERY season after the honey-flow we are called upon to give advice on how to proceed in case of trouble over the alleged trespass upon the property of an adjacent neighbor. In some cases we advise the removal of the bees; in others we recommend keeping them where they are. In the latter case we supply our bee-keeping friend with literature which he places before his complaining neighbor. We did this in the case of a prominent bee-keeper whose name for obvious reasons we withhold, and received back a reply which shows that our dose of literature convinced the complainant that he had "no case," and apparently the matter dropped. Of course, cases of this kind we always refer to the General Manager of the National Bee-keepers' Association.

HONEY DOUGHNUTS.

VERY many are fond of doughnuts and coffee; but when they become a little old they are dry and hard. The suggestion has been made to use a small percentage of honey to keep them moist. Who knows about this, and who can give us a good recipe for honey doughnuts? We know that honey will keep nearly all kinds of baked cakes soft almost indefinitely, the keeping quality depending upon the amount of honey used. Honey-jumbles, for example, twelve years old, as we know by actual experience, are as nice and fine eating as when they were first made. Some years ago we went through a baking establishment and were there told that honey is used because it preserves various kinds of cakes, keeping them moist, where a plain sugar would allow them to dry up in a short time, rendering them unsalable.

In this connection we should like to get reports from those who have a new honey

recipe, either for candy or cakes. Do not offer it unless it is first class, and something that you yourself have tried.

ZINC QUEEN-EXCLUDERS; RIGHT AND WRONG SIDE UP.

W. E. BURKITT, Honorable Secretary of the Wilts Bee-keepers' Association, of England, offers in the *British Bee Journal* a suggestion as to the manner of putting on perforated zinc queen-excluders that we believe is worthy of consideration. He says:

ZINC QUEEN-EXCLUDERS.

Are those who complain of excluder zinc hindering the passage of the bees careful to lay it on *right side up*? Years ago I saw this mentioned in the *British Bee Journal*, and found the necessity for it, as there is a slight burr from punching on one side, and this should always be placed uppermost, as I suppose many bee-keepers know.

If there is any thing in this idea (and apparently there is), manufacturers will probably see to it that the wood-bound zinc excluders have the zinc so placed that the burr edge will be on the *top side*, for it is apparent that it will be more difficult for the bees to pass the metal loaded than when their sacs are empty. For that reason the easier side of ingress should be presented to the fielders.

For a like reason the zinc excluder-guards should have the burr edge on the inside.

It is practically impossible, in the punching of the zinc, to avoid the burr edge entirely. If the rough side be polished off in a separate machine it will leave a feather edge inside the slots that can not be removed, and this would be worse yet. Attempts have been made to remove this burr; but die and punch experts say that it is impossible to eliminate it entirely, and for that reason there has been introduced the wire-bar excluders, so that bees can readily pass *either* way, because there is no right or wrong side.

THE COVER DESIGN; BEE-KEEPERS OF ANCIENT EGYPT.

WERE the ancient Egyptians the first bee-keepers? Many are inclined to think they were. If the apiaries of Old Egypt were stocked with *Apis fasiata* (which seems to be a purely African bee) they may have been. The Egyptians being kindred to the tribes inhabiting their "pathway of migration" from a prehistoric home somewhere in Western Asia may have led to the introduction of this beautiful species of apis among these peoples. Of course this would easily account for the very close resemblance of Holy Land and Cyprian bees to *Apis fasiata*. Be this as it may, the Egyptians early developed the art of bee-keeping, and, as the paintings upon the walls of their tombs and other edifices show, they employed various methods which, considering the time, show great aptness and intelligence. In explanation of the cover design we will say that the scene is a peep into Pharaoh's bee-yard, showing the keeper studying the bees as they fly about the hives. You will also notice that, chief among the objects shown, is an image of Thoth, their god of wisdom and learning.

This placing of the divinity of wisdom so near to the bees is significant of the fact that, thousands of years ago, the bee was considered useful by man for other reasons than the mere fact that it stores honey.

A MEETING OF OHIO BEE-KEEPERS AT COLUMBUS.

THERE will be a meeting of the Ohio bee-keepers at the Neil House, Columbus, Feb. 3 and 4, primarily to form a State organization and to consider needed foul-brood legislation. It is well known that the Ohio foul-brood law, based on the county plan, so far from being a "howling success" is an unmitigated failure. It was against our better judgment when this bill was proposed; but we finally acquiesced, thinking it was better to get *something* than nothing. But we are firmly of the opinion now that we would be just as well off without any foul-brood law, because now our legislators may come back at us and say, "You already have a law," and possibly refuse to grant us needed relief or even a hearing. Of course, there will be other subjects discussed aside from foul brood.

We call upon all the bee-keepers of Ohio to meet with us, for it is high time we were getting ready to do something. Both foul and black brood are spreading within our own borders, and it is important that we take a stitch in time. We ought not to go through the experience of Canada, New York, and some other States, in which brood diseases got a good start before remedial legislation could be put into practical application. Unfortunately, foul brood is getting a start in several sections of Ohio, and our bee-keepers should go before our legislature, now in session, two or three hundred strong, and then keep after our members until we get what we are after.

It is a shame that Ohio, which probably has larger invested interests in bees and bee-keeping than any other State in the Union, should be in a position where it has no adequate legal means by which it can stop the spread of bee diseases within its borders.

Mr. Henry Reddert, 2300 Schoedinger Ave., Cincinnati, O., secretary of the Southwestern Ohio and Hamilton County Bee-keepers' Association, is acting as temporary secretary. Any one interested should correspond with him at once. Please send him a postal, if possible, saying whether or not you can be present. This is a case where numbers will count heavily in our favor; and we propose that the Ohio State Bee-keepers' Convention go in a body before the committee that would have our bill in charge. The sooner we can act, the better.

On Jan. 31 and Feb. 1 and 2 E. R. Root will give addresses on bees, accompanied with the stereopticon, before the agricultural students of the Ohio State University, Columbus. Possibly there are some bee-keepers of the State who would like to come a day or two earlier to take these in as well as the convention at the Neil House on the 3d and 4th.

OUTDOOR WINTERING; BEES SEMI-HIBERNATORS; SOME THEORIES BASED ON OBSERVATION.

If the present cold weather continues throughout the Northern States, cellar-wintered bees will doubtless fare better than those on their summer stands. Protracted cold spells, when the temperature is only a few degrees above zero, especially if accompanied by high winds, are likely to be severe on outdoor-wintered bees, even if well protected in double-walled hives with ample packing. For such winters a large cellar, where the temperature can be kept reasonably well under control, is undoubtedly better. We are now satisfied that bees outdoors semi-hibernate during extremely cold spells. A large cluster will contract down to a ball no larger than a double fist. The individuals can remain in that condition, and resist a cold spell for a week or ten days, and possibly longer. During this period they take practically no food from the combs. If the cold lasts long enough, the cluster, stiff from cold, may be immovable, and, being out of reach of stores, may die. Many cases of this kind have we run across when pulling the bees apart the following spring. The slight consumption of stores in some instances would show that the bees died in early winter. Around such a cluster will be a row of empty cells about an inch wide. As the bees are closely compacted over empty cells they simply starve. From some experiments we conducted we do not believe cold actually kills bees; but during this period of semi-hibernation, in this chilled condition, they appear to absorb all the food within their honey-sacs or stomachs, and possibly some of the bodily tissue, the same as true hibernating animals.

If the colony is a powerful one, the cluster may be so large that it does not chill clear through. In that case the center of the cluster will move outward to get food while those on the outside of the ball appear to work inward. Such a ball of bees, by reason of the greater number of individuals, maintains in its inside almost blood heat. If it be torn apart on a cold day, the bees inside will fly out and resent the intrusion just as actively as if it were summer and suddenly disturbed.

Then also it appears that some bees have the power of resisting cold better than others. Experience in our own case shows that at least those strains that have been bred for color will not stand as much cold as the dark leather strains that appear to be more nearly the normal type of the race; but if for any reason the type is changed the ability to withstand cold is decreased.

In the foregoing we have attempted to state what appear to be facts based on a series of observations covering a period of nearly 25 years in breaking into clusters of our outdoor-wintered bees. When dealing with a problem of this kind we have to depend largely on circumstantial evidence; but many a man has been found guilty on circumstantial evidence.

STRAY STRAWS

BY DR. C. C. MILLER

"TOBACCO—A nauseating plant that is consumed by but two creatures—a large green worm and man. The worm doesn't know any better."—*Calvin Moon*.

MR. PRINTER, did you take liberties with that last Straw, p. 4, or did I write such foolishness? Just cut out that last line but five: "but we thought the bees could spread the combs."

J. B. MARSHALL, p. 29, I've no experience with flour-introduction. Some across the water report it very successful. Likely bees as well as queens should be well floured. Yield of honey at the time may have to do with it.

TO THE MAN who got up that index to GLEANINGS: Here's my hat off to you. [The entire index was prepared by our editorial force. H. H. Root is responsible for the whole of it except the index for editorials, which was prepared by E. R. Root.—ED.]

T. W. RAUM says that, in his part of Canada, alsike must be thrashed in the field and not in a barn, and some can not stand it to thrash it even in the field. I suppose it must affect the mucous membrane. Has that any relation to the reported effects on horses?

DR. R. MUNSON questions Prof. Bonnier's experiment as to bees marked with talc foraging repeatedly on the same spot, for he says bees are always cleaned off before leaving the hive. But Europeans mark their queens indelibly, and might not talc in some way be applied so as not to be removable?

DON'T BOTHER with an uncapping-machine, because you can uncup with a knife as fast as an extractor will take the combs, says p. 753. I don't see the logic in that. If a machine will work faster than the knife, is the time saved of no value for some other purpose? One could at least be reading comfortably between whiles.

JOHN H. LOVELL, p. 9, don't be too hard on writers who think bees get honey from roses when it's only pollen. How many beekeepers know about it? But here's a question: When bees dig into cultivated rose-buds, barely opened enough to show a little color, what are they after? Hard to believe they are after immature pollen.

A. I. ROOT, while there is a difference of opinion as to whether cereals should ever be eaten raw, your saying "It is all right to assist the teeth in every way you can," p. 31, may be carried further than you intended. Fletcher says chew till food is creamy, and you can't chew much on soups, while Terry protests against sloppy foods that don't need chewing.

THE BEE-BOOK "Der Bien und seine Zucht" has reached its 11th thousand, and its author says, *Deutsche Bienenzucht*, 177, that no other work of the world's bee-literature has ever

reached such a gigantic success. Somehow Pfarrer Gerstung has overlooked Cowan's British Bee-keeper's Guide Book, with its 45,000. Then there's Root's A B C and X Y Z, which is not such a bad success with its 116,000.

UNUSUALLY mild weather up to Dec. 5, the rest of the year fierce, averaging about 4 above. Yet they say the ground is very little frozen. A 15-inch snow-blanket keeps it warm. [It was mild weather here up to the first of December; then it turned cold, and continued so for practically the whole of the month. It began to warm up again on Jan. 1 and 2, but has turned colder to-day (Jan. 3). The ground has been frozen very hard in this vicinity, for the freeze came before the snow. How this may affect clover we don't know.—ED.]

PROF. H. A. SURFACE is good authority; but his figures in *Economic Zoologist* are a little askew for this "locality." He says cellaring may save 10 to 15 pounds of feed per colony; but trouble and expense of preparing for cellar and moving may be more than added cost of wintering on summer stands. My bees are carried in and out without any preparing, and the cost of moving is less than 2 cents per colony. You can't get 10 pounds of feed for 2 cents. But in many cases his figures may be all right. At any rate, if I lived in Pennsylvania I suspect I would winter outside.

THE EDITOR of *Canadian Bee Journal*, page 436, quotes at length GLEANINGS' editorial, p. 588, and gracefully acknowledges Editor Root's arguments in favor of empty cells in the winter brood-nest so convincing that he gives up the battle. Such an unconditional surrender was hardly necessary. I don't know for a dead certainty, but here's what I think: It depends on the space under bottom-bars. With a half-inch space and combs solid full, the bees will freeze to death; with a space of two inches or more they will be all right. In many cases in my cellar bees fill that 2-inch space with the cluster, and I don't believe the bees in that cluster care whether the cells above them are full or empty. [The editor of the *Canadian Bee Journal* and ourselves were talking about the winter-nest when bees were wintered outdoors. Apparently you have in mind cellar wintering. When bees are indoors it is not very important whether they have a winter-nest, such as we have described, or not; but the fact that they will always make and prepare such a nest, if given an opportunity to do so, when wintered outdoors, seems to show that nature regards it as important. Space under the frames for cellar wintering might affect the proposition; but it would only increase the difficulty for outdoor bees unless the frames were very shallow.

In this connection we wish to convey our acknowledgments to Editor Hurley, of the *Canadian Bee Journal*. His candor and evident desire to consider evidence is such that his readers will always have confidence in his writings.—ED.]

SIFTINGS.

By J. E. CRANE, MIDDLEBURY, VT.

One who has the time can not do better than follow Mr. Doolittle's method of reading bee-papers, page 659, Nov. 1.

Page 591, Oct. 1, Mr. Foster suggests the use of scales in the packing room, which is a decidedly good thing. I have found a light spring scale for weighing mail a very good thing for this purpose, and very inexpensive.

On page 587, Oct. 1, it is stated that when there is enough honey-dew to impair the flavor the honey must be labeled "honey-dew." Now, 30 per cent honey-dew would certainly impair the flavor, even if the rest were the choicest clover honey; but would it not be misbranding to label such "honey-dew" when 70 per cent of it is genuine honey? [Yes, in a sense; but the ruling requires putting under the lower grade.—ED.]

CARBOLIC ACID IN SPRAYING MIXTURES.

On p. 587, Oct. 1, mention is made of the use of carbolie acid in spraying mixtures to keep bees from being poisoned. Can any one tell the proportion of carbolie acid used? I should think that, if enough were used to drive the bees away, the blossoms would be injured. Our Vermont law provides that "a person who sprays fruit-trees when in bloom with a solution containing less than three pounds of unslacked lime to fifty gallons of the solution shall be fined not more than \$40.00 nor less \$10.00." Would not the lime in solution be safer for the fruit-grower as well as the bee-keeper? [See p. 778, Dec. 15.—ED.]

DISTANCES BEES FLY.

Some interesting views on bee-flights are given by prominent bee-keepers on p. 587, Oct. 1. Now, while it is probably true that bees often fly long distances, it would seem to me equally true that the bulk of the honey is gathered from near-by sources. A neighbor was telling me, not long ago, how in a yard of bees located near the east shore of Lake Champlain he secured surplus honey from only one of two hives, although the rest of the colonies were just as strong. The only solution was, that the bees from these two colonies flew across the lake, where there was considerable basswood, while the rest of the bees did not.

FULL SHEETS OF FOUNDATION IN SECTIONS.

On page 604 Dr. Miller goes for F. Greiner for objecting to light foundation in sections, and the doctor sums up his reasons by saying that it is his belief that "using full sheets of foundation is of such advantage to the producer that it overbalances several times any disadvantage to the consumer, and hence full sheets of foundation may be

used without any violation of the golden rule." Good! Now, if there is anywhere in the United States a dealer who will pay more for honey in comb built wholly by the bees than he will for that which is built of light foundation, let's hear from him. [Our columns are open for reports of this sort.—ED.]

Mr. Holtermann, page 592, Oct. 1, makes the somewhat startling statement that half of the honey produced in Canada could be sold locally; and, what is more, he is probably correct. At the recent meeting in Albany of the New York bee-keepers this subject was taken up and similar conclusions reached. By the way, that was a pretty interesting convention. Those New York Staters seem to know which side of their bread is buttered, or, rather, how to butter their own bread. And Prohibitionists seemed at the New York convention about as plentiful as bee-keepers. At any rate, Dr. Miller or Pres. York, of the National Bee-keepers' Association, would have felt quite at home; and, besides all this, it was quite a comfort to me when I got home not to have my wife tell me that I smelled of tobacco smoke.

On page 526, Sept. 1, Wesley Foster says, "When a market is developed for cases without glass that will pay as well as for those with glass we shall be effecting a big saving for the producer." Well, how are you going to develop a market until you put up your honey without glass? There are some rather enterprising bee-keepers in Ontario; and, if you will believe it, they have been putting up honey this year in cases without glass and sending to the city dealer right in competition with glass-front cases, and here is what one dealer says of them: "We like them very much, and thus far what honey we have received in them has arrived in excellent condition. They are a great improvement on the wooden glass-front box, and we think that, in due time, they will be used entirely for shipping purposes."

It doesn't look as though it would be difficult to develop a market there for honey in cases without glass. Of course, the case with which this commission man was so well pleased was our improved paper case that we have had the privilege of introducing the past season.

I was in Boston some ten days ago and called on one of the largest dealers in honey in that city. He did not recognize me; and as he had both paper cases of honey and wooden cases with glass fronts containing some beautiful white honey, I asked him how he liked the paper cases. He said he liked them well. I objected to them on the ground that they did not show off honey like the wood-and-glass cases. He replied that it was true; but he said that the honey arrived in so much better condition that it more than made up for lack of attractiveness. He said further that they had found broken combs in about every tenth case of wood.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

FOUL BROOD; HOW DISTINGUISHED—HOW CURED.

While I had foul brood in my apiary during the early seventies, and in two years succeeded in curing the whole so completely that I have had none of that dread disease since (now known as American foul brood), I know that I am not fully up to the times on the foul-brood question. However, as I effectually cured it, and know that the means I used will always cure it, it may not be amiss to give this old plan again. But before telling how to cure it I will tell how to distinguish this disease.

American foul brood is discovered by the apiarist finding one or many cells in a colony containing brood with sunken cappings, and probably a small hole near the center about the size of a knitting-needle, although this small hole is not always present. Upon opening the cells the larva is found stretched out at full length, dead, and of a dark-brown color, dying from one to three days after being capped over. If the larva has recently died it is in shape as perfect as the live larvæ are; but those alive are white, while those dead are of a light-brown color at first, soon changing to a dark brown, and finally to nearly black. Upon touching a dead larva it is found to be a salvy mass, and the whole hive, if far advanced, emits a very disagreeable smell. Some claim this smell is like that of an old glue-pot; but I know of no smell to which it can be compared. The disease progresses, as a rule, very rapidly, and from a few cells in the spring it so spreads that by fall from one-half to three-fourths of the cells will be filled with dead larvæ, the smell of which is nearly if not quite as penetrating as carrion, but not at all like it. Thus what should have constituted an increase died; and as very few larvæ are removed from the cells, the bees grow less and less in numbers until all are gone unless the apiarist comes to the rescue.

I have been thus particular in describing the disease so none need mistake it, and also because there is another disease similar, often called European foul brood, which is not our old foul brood, but what is termed, in New York, black brood. With this last, possibly more larvæ die before the cells are capped over than do afterward, though the caps to the cells where the larvæ die after being capped over have very much the same appearance as the genuine foul brood; but the dead larva is of a yellowish white at first, then a grayish white, and finally brown, while, instead of being stretched out at full length in the cell, it is generally drawn up in a more compact shape, especially soon after it dies. After a while this so dries up that the bees remove much of it; and, if not too bad, when the honey-flow comes on it may

be all removed, the cells cleaned, and the combs filled with honey and capped over, so that, as far as the honey is concerned, no one would know that there had been any disease at all.

Cutting out diseased cells having the genuine American foul brood is of no avail, as the germs of the disease are in the honey. Also, the dead larva never dries up as does that of "black brood," so that all in the hive are removed, although some strong vigorous colonies of *Italians* come very near doing so (if the disease has not progressed too far) on the approach of cold weather in the fall, so that there are only a few cells at that time of the year. However, genuine foul brood is always progressive; and while it may appear to be on the wane in such strong colonies late in the season, yet with spring it comes on again with increased vigor, and always victorious, unless the apiarist is on hand to cure it. This brings us to the curing part.

When a colony is believed to have the genuine foul brood, mark the hive; and if *there are bees enough to ward off robbers* let it entirely alone for three weeks to a month, when it should be examined again just at night if there is any danger from robbers and (if in the breeding season) the genuine will have progressed so you will be sure it is foul brood, while the black brood may simply have held its own, or decreased so as to be nearly all gone. The genuine means *progress* every time, although in some rare cases a colony may hold out over two seasons. As soon as it is determined that the disease is American foul brood, shake or drive the bees into a clean empty hive, render the combs into wax, and *boil* the honey at once before you forget it. Don't set it away thinking you will do it at some other time; for if you do you may repent at a great loss some future day, when, through some mistake, it gets inside, not of one hive, but many of the hives in the apiary. Boiling such honey half an hour or so destroys the germs of foul brood and makes it as good as ever for the bees. If there is plenty of nectar, so there is no danger from robbing, drive or shake off three-fourths of the bees and leave the remainder to care for the brood. In twenty-one days treat again as at first, and a cure will be effected as far as that colony is concerned. After the bees have been in the clean hive long enough for the larvæ to hatch from the eggs laid by the queen in the new comb the bees have built, they can be given foundation, empty combs, or frames of brood, the same as any healthy colony. Burn the hive and frames, or throw them into a large kettle of boiling water, after the foul-broody combs have been removed, and thoroughly boil any thing that may chance to have any of the foul honey upon it. Right here I wish to emphasize the fact that *American foul brood* is in the honey; and if you do this work at a time or in a place so that a robber gets a load of this honey, or carry it on your fingers, knife, or any thing else, to a healthy colony, that colony is doomed.

I have now told you how to cure one hive, so of course you know how to cure a hundred; and if I had a hundred colonies—yes, or twenty—I would go to work in just the way given, knowing that I would succeed; but if I were satisfied that I had only from two to ten colonies in an apiary where from fifty to one hundred were standing I would accept the resolution adopted by a bee convention some years ago, which was this: “Resolved, That this convention believes that foul brood is a very dangerous disease, and that we advise all to be careful in experimenting in regard to its cure. If but two or three colonies are affected in any apiary, destroy hives, combs, honey, and all by burning.” I would do this for the reason that I should consider the risk of experimenting, or trying to cure the two or three or ten greater than the value of the colonies.

[On the above, Charles Stewart, one of the foul-brood inspectors of New York State, comments as follows.—Ed.]

In both American and European foul brood the intensity varies greatly as to odor. I have seen yards where one could smell the disease before reaching the yard; and then, again, where the disease had lost some of its virulence an odor was detected only by placing the comb close to the nose.

Most of the larvæ die just previous to the proper time for capping, in a colony affected with European foul brood.

Diseased colonies should be treated as soon as possible when found; as a delay of a month, especially if the bees are blacks, might cause the loss of the whole apiary. It may be necessary to wait until some honey is coming in, as it would be wrong to treat them when robbers are about.

I have seen so much trouble come from feeding back honey taken from diseased colonies, even though it was boiled, that I have always advised against it except in the hands of an expert.

After disinfecting thousands of hives in years gone by, we find we get the same results without this work. The brood-frames are boiled as much to clean them as to disinfect. Bees can be treated right in their own hives, taking away every cell of comb and replacing with frames of comb foundation. Formerly it was thought necessary to shake again in three or four days; but we find the average number reinfected is about one in ten, so we prefer to watch these colonies treated, and treat the tenth one rather than treat all of them a second time. If I found but one or two colonies in a large apiary affected but slightly I might destroy them at night when all bees were in the hive; but if badly affected I would treat them, feeling certain that other colonies near them would soon show the disease and would have to be treated. That is, if a colony had the disease long enough to show it badly, others near it would be almost certain to contract the disease.

BEE-KEEPING IN THE SOUTHWEST

By LOUIS SCHOLL, NEW BRAUNFELS, TEX.

PROSPECTS IN TEXAS FOR 1910.

Prospects are good. It has rained bountifully in most parts of the State at least, and we are expecting the return of one of those good old-fashioned Texas honey-yields next season. Owing to the lateness of our fall, and almost a total absence of cold weather until in December, several sources such as cotton, broomweed, and some minor plants, yielded some nectar and pollen right along until the cold weather cut it off. This gave the bees a chance to fill up their brood-nests and rear a lot of extra brood. These young bees will be most valuable next spring, and hence the colonies are in the best possible condition for winter. With an early opening of spring next year the bees should be in fine shape for any honey-flows, no matter how early they come. However, the spring may be late, as it has been unusually warm so far this winter.



ALFALFA HONEY IN TEXAS.

As yet there is very little of it produced since the area planted in alfalfa is not yet very extensive; and in many places where it is planted the atmospheric or other conditions that seem to exist cause it to yield no nectar. The most luxuriant growth of alfalfa, in large fields within a mile of an apiary, have been found destitute of bees, while in other parts of the State the alfalfa was visited well and resulted in some surplus honey. These differences have occurred with alfalfa with and without irrigation, and upon several occasions in the same fields—that is, at certain times bees worked on it and at others left it entirely alone. This is an important subject for scientific investigation, especially since a great number of people are inquiring more and more as to whether alfalfa is good for bees in Texas. It's up to our experiment stations.



BULK COMB VS. SECTION HONEY.

That description of Wesley Foster's workshop, p. 725, gives one the “shudders” if he is not used to such things himself. Culls still unsold in November; No. 1, 2, and 3 grade and close grading; scraping separators and section-holders; twenty to thirty thousand sections to fold and starter; broken tins, cracked section-holders and separators to repair; besides the selecting and discarding of daubed and stained sections that have been on the hives but not finished, etc. All this makes us Southerners wonder whether section-honey bee-keeping is worth while. To this must be added the extra care of the bees in the early spring toward getting them strong enough so they *can* work in the section-supers; later, coaxing them into these supers so they *will* work in them; and even after that they must be coaxed to finish the

sections properly and to fill each individual section just so. First the colonies must be *stimulated* and the hive *expanded* to obtain rousing colonies for best results; this obtained, the hives must be *contracted* to force the bees *up*; but it generally forces them *out*, as swarms; and this must be checked after the bee-keeper has brought them up to this point. Finally, it all depends on how well one succeeds with the above whether he makes a crop of section honey or not. If he makes a crop, then we come back to the grading-rules, etc., alluded to above, so that, taking it all in all, we wonder why others are still following along an old rut—that of section-honey production, which is the most expensive way of producing honey. In Texas we abandoned this method long ago for something better and more profitable—the production of bulk comb honey. It is easier to produce, it yields larger crops, sells better, and results in the most dollars.



AN AUTOMOBILE FOR OUR WORK.

A thousand colonies of bees in twenty or more apiaries, scattered from a few to nearly two hundred miles from home, and only one assistant as help, has brought up the question of getting around from one place to another as fast as needed; and how to solve this question is the subject now before us for the coming year. While we have managed to do nearly that much heretofore by the use of several teams of horses, it will be quite out of the question thereafter if our plans for still more extended operations develop.

The automobile may be the only thing to solve the problem; yet we realize that it is expensive, if a good one is to be used, and the cheaper ones, so far, are not as reliable, especially during the height of the season. We have studied the many different makes, and although we have not yet found just what we want, the coming season will find us flying (?) from yard to yard in a "machine." We figure this way: If we depend on horses we must purchase two more in addition to the one horse and two mules we are now using. Figuring the cost of these, extra cost of a new lot and stable (for we live in the city), their feed and extra care, morning, noon, and night, we encounter quite an expense in a year. Besides, they eat whether at work or not, and need the same daily attention. Would they not in the long run cost more than a machine? This is not all. If we take a trip to one of our yards 20 miles away it takes about 4 hours to go and 4 to return, leaving us 2 hours for work out of a ten-hour day; and on a hot summer day not only the horses but the persons are tired out from the long weary drive. With an auto just the reverse is true, a two-hours' drive and eight hours of work, also the enjoyment of the recreation obtained on the way. These are not theories, for we have had some experience in this matter. We are sure that, with the use of a good reliable machine, more than twice as many colonies

of bees can be managed by one man, and that, as soon as we have better perfected automobiles or motor-vehicles, and the prices are lower, more bee-keeping will be done *a la* automobile. The question now is, "What kind of machine should the bee-keeper adopt under present conditions? Who can advise us?"



THE TEXAS PEOPLE AND ALFALFA HONEY.

Owing to the fact that very little alfalfa honey has been produced in Texas, the people, as a matter of course, have not become used to its flavor. Hence its sale in many markets, into which it has been shipped from Colorado and other points of the west, has been comparatively slow, and in many cases some trouble has been experienced on the part of some of the purchasers as a result of its unfamiliar flavor. Many are the complaints made regarding this honey, the main one being that it is adulterated—not real honey; others that it is spiced. Some people can not stand the flavor, hence can not eat it as they do our real Texas honey. The most unique description given of alfalfa honey, and that by numerous persons, is that "it is too white—hasn't any real honey color to it, and is strongly flavored with cinnamon." Many purchasers will not buy alfalfa honey a second time, and would not the first if they had known its flavor.

Our experience at the fairs annually has put us in closer touch with people of this kind, and it is amusing to hear the different complaints, which are only a lesson to us, and show the necessity of more education to the general public on these matters.

That experienced bee-keepers themselves should have trouble in the respect above mentioned would seem ridiculous, but it is a fact. In our exhibits a year ago a certain bee-keeper sent some section honey of as fine white quality as we have seen. At the close of the fair this honey was left at the secretary's office together with three other and similar packages of section honey. These were changed about in some way, and our bee-keeper, without knowing it, got a case of the others when the honey was returned to him. The sections being the same style in each case he did not recognize any difference until it was put on the table. It was hurried back to the secretary's office, with the declaration that it was not his honey—that this was "adulterated, and flavored with cinnamon," and he desired *his* honey back. The matter was referred to me, and I was asked what had been done with this man's honey. Investigation later showed that his honey had been taken by another party, and alfalfa substituted by mistake.

POLLEN ABOVE EXCLUDERS.

On page 690, Nov. 15, Dr. Miller remarks that he puts combs with pollen over an excluder, and it is not long before they are cleaned out. Over the excluder is the place where I am bothered the most. I have to clean out a big lot every spring, from supers. Bees fill a lot of frames with pollen where I want honey stored.

Rancocas, N. J., Dec. 18.

S. B. HUSSEY.

GENERAL CORRESPONDENCE

THE CONTROL OF BEE TERRITORY.

At the Present Time No Bee-keeper has a Legal Right to his Territory; Is a Moral Right Sufficient?

BY DR. C. C. MILLER.

Some time ago Mr. J. L. Byer threw out a sort of challenge for me to define my position with regard to the matter of occupying bee-territory, with a slight intimation that there was something not just right about my position. Mr. Byer is a man whom I hold in high esteem, and I should like to justify myself in his sight; but I have delayed and hesitated to reply, partly for want of time, partly because Mr. Byer was just a bit vague, and I didn't know just where to take hold, and chiefly because I did not feel sure the time was ripe for any discussion of the matter.

Years ago I made the attempt to advocate the idea of having such legislation as to allow each bee-keeper to have control of a certain territory, so far as bee-keeping is concerned. I do not know whether any one agreed with me in thought, but certainly, so far as I remember, no one agreed with me in word, for no one publicly agreed with me, and I stood entirely alone. All who expressed themselves at all on the subject opposed me, notably my good friend Prof. A. J. Cook.

If I thought there was no change in sentiment I would not consider it worth while to occupy space for a single line on the subject. But I know there has been change, at least change as to *expressing* opinion. In Colorado, if I am not mistaken, a rather emphatic resolution was passed to the effect that a man who would encroach on territory already fully occupied by another was not quite what a good man should be. In the Imperial Valley the bee-keepers have banded together in making common cause against such intruder in such a way as to roast him out. In far-off Australia they have gone perhaps to the extreme of the desired limit; and a man by paying a small sum may plant an apiary with the assurance that no one else may locate a hive within a certain limit.

I think there is a general belief that a man occupying territory has a certain priority right in that territory—a moral right; but with regard to a legal right there is entire apathy. As nearly as I understand it, the belief is that there is no need of any legal right, or that if there is any such need it is not possible to obtain it. I will not discuss just now the latter point. But I want to repeat with all the emphasis I can command what I have said so many times, that if ever bee-keeping is to stand upon a firm basis like other lines of business, there must be such a condition of affairs that the bee-keeper shall feel just as secure against interfer-

ence as the stock-raiser who is assured by the law that his fields shall be occupied by his cattle and by his alone.

That, friend Byer, is the foundation-stone, the keystone of the arch, and all the other figures of speech you can imagine as to any views I may hold. If you will show me I'm wrong in that, I need take no time to tackle any other point. And because I hope it may do just a little good in bringing about the day that I think will some time come, although probably not in my time, I ask a place on the stage for a while, Mr. Editor, to speak my little piece.

There are some—good men too, like W. M. Whitney, who think any man has a right to plant an apiary wherever he can get enough square rods of ground for its occupation, without any regard to surrounding bee-keepers. Granting that they are right, that makes it all the more important that there should be some way whereby, without doing injustice to others, I may be able to obtain control of a certain territory, for they take away all moral right, the only right that any one can now claim to a given territory.

Others, perhaps, believe heartily in priority rights, but think there is a strong enough moral feeling in the minds of all bee-keepers to make these rights respected, so that no legal right is necessary. Such people need to be told that these rights have not always been respected in the past, and there is no reason to believe that they always will be in the future. If they have always been respected, why should vigorous resolutions have been passed against offenders? why should Imperial Valley bee-keepers unite to punish offenders?

On page 673 Morley Pettit says that infringing on territory so as to overstock it is a boomerang. It is. Suppose a man plants an apiary in a locality I already occupy fully, he will suffer from the boomerang in the way of failure of crops; but how about *my* crops? Don't I suffer as much as he? And is it the square thing thus to oblige me to pay for his tuition?

Very pertinently Editor Root asks, p. 674, "How are we going to educate him so that he will be 'wise' enough not to locate there in the first place?" Even if you could do so, there's room for a whole lot of trouble. If Smith has a single colony, it would hardly be the fair thing for him to warn off all who should want to locate within a mile or two of him. Suppose he has 10 colonies, it would be much the same. Suppose he has 75, and he thinks that any increase of numbers would result in loss instead of gain. I think differently. I think 100 colonies would find support on the same ground. I plant an additional 25 colonies close beside him, so as to save the nectar from going to loss. If he is right in his view, then he is suffering a real loss from my intrusion. But who can decide? I've been more than 40 years trying to learn how many colonies my locality will bear, and I don't know yet. If he had a *legal* right to the territory, then there could be no trouble.

Suppose another case, and not an uncommon one. Suppose Jones has found a favorable locality where a hundred or more colonies can easily be supported in one apiary. At considerable expense he moves to that locality, starts in with 25 or 50 colonies, and expects to build up to 100 colonies. Claiming that the field is not occupied, I plant 50 colonies right beside him. Pretty rough on Jones, but I insist the field was not overstocked, and who is going to tell me I've no right there? There's no such conflict about a cow-pasture; and why should there be as to a bee-pasture?

There are other ways in which trouble may come—in which trouble has come. I tell you, good friends, the present loose way has never been satisfactory, and never will be. I suppose I've had less interference than the majority, but I'd give a fair price to-day to have absolute control of a given territory. I suspect there isn't a possessor of 50 colonies anywhere in the land who does not feel the same way, although it may not be popular to say so. Is there any good reason why a man who makes his living from bees, or part of his living, should not feel just as secure in his field as the man who makes his living from cows? Just keep this in mind: *No bee-keeper in this land has a legal right to his bee territory.*

Marengo, Ill.

EUROPEAN FOUL BROOD.

The Cure a la Alexander.

BY C. F. BENDER.

Dr. Miller's excellent articles on European foul (or black) brood remind me that perhaps I owe the bee-keepers an article on this important subject. I am glad to see that the doctor has tried the Alexander method. Shaking on foundation has been recommended so persistently that many of us hardly realize that there is another and a better remedy.

My experience of the past seven years has convinced me that there are only two methods of treatment worth mentioning for either form of foul brood—the shaking plan, with or without starvation, and the method of dequeening for three weeks and requeening with hardy stock. For the American form the dequeening method is useless; for the European form it is safer and better than the foundation treatment.

I had practiced the Alexander plan, without knowing it, for two or three seasons before it was put before the public. The way of it was this: In the summer of 1905 I had begun to run short of bees from repeated losses. As most of the affected colonies were strong I shook them on foundation and set the brood in a new location to hatch out, intending to shake the combs again at the end of three weeks, and form new colonies with the young bees, thus treating them and getting increase at the same time. When the brood had all hatched out those combs and

bees looked so clean and smelled so sweet that I decided to requeen them, and try them another season. They stayed healthy; but as I had requeened at the same time with different stock, I hardly knew whether to attribute the cure to the stock or to the dequeening. To be on the safe side I kept on doing both, and still think that both are necessary.

Since the Alexander articles came out I have been following his plan as a regular routine. About the first of May I begin examining all weak or otherwise suspicious colonies. When one is found with dead brood the queen is promptly killed, even if that means the probable loss of the colony. Toward the last of May the queens, instead of being killed, are used to requeen the earlier cases, though only temporarily, as they are usually killed later, and young queens of other stock substituted. The doctor tells us not to attempt treating weak colonies, and he is entirely right; but he does not go quite far enough. Instead of uniting before treatment we must unite before they become diseased; that is, we must never allow a weak colony on the premises.

"To bee or not to bee," that is the question to the novice who has a serious outbreak of disease. It has been such an important question to me that I think I have been rather careful in making experiments; I know I have been careful in keeping records; and these same records have taught me to drop entirely the nucleus method of making increase. Sixty per cent of colonies built up from nuclei, though apparently healthy the first year, will develop the disease the following season. So I think best to make all increase from natural or shaken swarms.

After this disease has once started in an apiary there are three principal ways in which it spreads: By exchange of combs, by robbers, and by nurse bees entering the wrong hive after taking a flight. Of course, all exchange of combs should be stopped at once. Strong colonies and Italian stock will control the robbing if one is at all careful about opening hives during a dearth of honey.

I am a little diffident about speaking of the spread by nurse bees, because I have never heard any one mention it as a matter of any importance. But the fact seems so clear to me that I will tell you how I came to notice it. My hives are arranged in pairs, mostly facing south, with six to ten feet between the pairs. In April, 1906, the first case of disease occurred in a left-hand hive toward the front of the apiary. About two weeks after I had discovered this case, two more appeared in hives immediately behind the first, both on the left-hand side of the stand. The cases kept coming in regular sequence until there were ten, all except one on the left side of the stand, forming nearly a regular row across the apiary. I could see no explanation except that it had been carried by bees entering the wrong hive, most likely by nurse bees which had been caring for the brood in the infected hive, and im-

mediately began the same work on entering the healthy one. Since then I have seen the same thing often, though not so strikingly. The remedy, of course, is to spread the hives as much as possible, and to face them in different directions. But I think it is perfectly safe to keep them in pairs, as I never knew bees to mistake right and left.

An odd thing is that robbing infected combs does not always cause the disease in the robbing colony. Three years ago colonies number 34 and 59 went partners in robbing out a stack of diseased combs. Neither one has ever shown any dead brood. I have reared queens from both, hoping to get stock that was more or less immune, but am not sure that I have it.

Two things the novice is always anxious to know when he finds dead brood; first, what disease is it? second, whether it is going to put him out of business entirely. Regarding the first, I think the roping test is a sure one. Twist a toothpick in the oldest dead larva you can find; pull it out; and if it draws a thread, call it American foul brood. If it does not draw a thread, and smells sour, call it European and kill the queen.

Regarding the second question, whether it will put him out of business entirely, no; not unless he wants to quit. He can save eight colonies out of ten by proper treatment. In the case of European foul brood I think about three out of the ten would get entirely well in the course of time without treatment of any kind. But in the mean time they would be worse than useless, and would spread the disease to every other colony within flying distance.

Newman, Ill.

PAINTING HIVES.

**What Paint to Select, and how to Mix;
Complete Instructions from a Prac-
tical Painter.**

BY C. G. HULICK.

The part that usually gets the amateur painter into difficulty is the buying and mixing of paint. My experience as a house painter, from 1896 to the present, shows to me that there is no better and cheaper paint than pure white lead and pure raw linseed oil. The purity of these two parts is essential to a durable paint. Most people do not know that pure oil is the basis of good paint. Linseed oil is the only good oil known to the trade. Pure raw oil *boiled* in a kettle has a much "heavier body" than the so-called boiled oil, of which a circular issued by a prominent Chicago paint-manufacturing firm tells us is heated only to near the boiling-point, a dryer added, and sometimes other adulterants. White lead and oil are not hard to get mixed if only a small quantity of oil is added at a time.

To mix the ingredients, lift some lead into a bucket and stir, if possible, before adding oil; then pour in half as much oil as there is lead, and stir until thoroughly mixed. Add

half the quantity of oil as before, and stir. Repeat until thin enough to spread well but not run. Then put in from a half to one pint to the gallon for winter painting, and one-fourth to one-half pint for summer, of Japan dryer when raw oil is used.

This is where I differ with F. Dundas Todd, who does not use dryer. In this climate, paint mixed with raw oil would wrinkle if used in cool or cold weather, and that is where many of us have time to put together and paint the hives we use. Japan dryer causes the paint to dry from the wood out instead of skimming over and wrinkling with the cold. Raw oil dries very slowly in cold weather, page 857, 1909.

For hard pine knots and pitchy lumber, use turpentine in the first coat—one pint to the gallon.

Painting hives adds durability and neatness; keeps ants away; keeps water out, etc. This spring I bought some dovetailed hives, two years from the factory, that had only one coat of paint. When I began to paint them I found the bottom-boards almost gone, rotten inside, as well as badly cracked all over, proving to me that hives should be well painted.

Why do Dr. Miller and Mr. Doolittle not paint their hives? Why should we let hives waste by decay when paint will preserve a hive as long as a house? The advancing price and decreasing quality of lumber makes the strongest argument for preserving the hives we have. I paint the dovetails, rabbets, and joints of all bodies, covers, bottoms, and supers, and give them three coats of white lead and oil after nailing. We have enough moisture here to use up an ordinary hive in about two years, unpainted. Do not the bees deserve the most comfortable moisture-proof house to live in that we can give them? Buying bees in old, rotten, and shaky hives makes one look with much pleasure on sound well-painted hives.

Ainsworth, Iowa.

[We are glad to indorse all of these suggestions. There is nothing better than a pure white lead and linseed oil. In this connection we wish to caution our readers against using cheap ready-mixed paints. The pure-food and drug act does not prevent wholesale adulterations of any article of manufacture not calculated to go into the human stomach. The consequence is, there are but very few brands of ready-mixed paint that are pure; and even some that are contain too large a percentage of zinc. While zinc is good for inside finished work, it has a tendency, when mixed with white lead for outside work, to scale, and hence after a time the house looks flaky. Even after it is repainted it looks badly, and, what is worse, some of the old scales will flake off, carrying with them the new paint. A pure white-lead paint, after it has been on wood a good many years, will chalk like powder. A second coat of pure lead and oil right over this will combine with the lead pigment from which the oil has dried out, and make a good, new smooth finish.]

If one can not be sure of getting a ready-mixed paint that is pure he had better buy pure white lead and oil and mix them as directed in this article. But perhaps the reader would like to know what lead paste is pure. There are several good brands, among which we might mention Morley, The National Lead Co., and Sherwin & Williams.—Ed.]

AN APPEAL TO NEW JERSEY BEE-KEEPERS.

BY ALBERT G. HANN.

On Dec. 18, at the last annual meeting of the New Jersey Bee-keepers' Association our foul-brood bill was thoroughly discussed, section by section, and approved; and the members present determined to do all they can to get the bill enacted into law at the present session of the legislature. But there remains much to be done by all other bee-keepers in the State. In the first place we should like all other members who have not done so to send us their annual dues of 50 cts. for 1910, and ask for a printed copy of our bill. Then we want all the other readers of GLEANINGS to join our association, send us the annual dues of 50 cts., and get a copy of our bill and enjoy the privileges of membership.

If there are any readers who do not see fit to join us we should like to have them write us, enclosing a stamp, asking for a printed copy of our foul-brood bill, and tell us if there is any disease among their bees, or if there are any careless bee-keepers around them, or if there are any box hives.

We are asking the readers to join our association, for, the larger our numbers, the greater prestige it will give us in asking for a bill. If only a few ask for this bill it will look as if they were trying to create an office for one of them. Then the association needs more funds to carry on the work properly. There is considerable expense connected with getting a new piece of legislation enacted like this, such as postage, printing, telephone fees, and traveling expenses. It is not fair that this should be borne by a few bee-keepers, as the law benefits bee-keepers throughout the whole State.

By the time you read this, our bill will have been introduced. We want to urge every reader of GLEANINGS to write to their senators and assemblymen from their respective counties to support our bill. Write a short business-like letter; explain briefly what foul brood is—that it is a germ disease; how it spreads by infected honey; what a danger the careless bee-keeper is, and how our bill will help eradicate the disease. Compare our interests with the dairyman's interests, and explain that the bee-keeper's property has just as good a claim to protection against contagious diseases as the cattle-raiser has to protection of his herds against contagious diseases by legislation. We have laws protecting cattle against contagious disease. Mention further that California, Colorado,

Idaho, Michigan, Nebraska, New Mexico, New York, Ohio, Texas, Utah, Washington, and Wisconsin have foul-brood laws; that Connecticut and South Dakota passed foul-brood laws last winter, and other States are trying.

We should like to ask especially those interested in bees in Essex Co., Hudson Co., and Union Co., to see and to write to their assemblymen and senators from their respective counties. Those three counties contain a majority of the members of the assembly, and therefore we must get them to favor our bill. *Without the favorable action of the assemblymen from those three counties our bill will fail.*

I trust that this will be our last effort, and that we shall succeed, as, indeed, we will if each bee-keeper will do his part.

Join our association now.

Pittstown, New Jersey.

VENTILATION BY RAISING THE HIVE-BODY OFF THE BOTTOM.

By its Use all Loss can be Prevented in the Winter, and Almost all Swarming done Away with in the Summer.

BY A. A. CLARKE.

I have been interested in the discussion on the subject of ventilation of hives by J. A. Yeoman, page 638, Oct. 15, and the article by the editor on page 504, Aug. 15th issue. This confirms what I wrote in GLEANINGS, page 970, July 15, 1907, when I sent my method of ventilating in the summer time. I have been using a similar method of ventilation in the cellar, as that is where we are compelled to winter our bees in this latitude. I have adopted this scheme of ventilation as being the most practical and sure way of wintering for our uncertain winters. I am after results, not theory. I have demonstrated that, with sealed covers, plenty of stores, and young queens combined with proper ventilation, there is no fear of weak colonies in the spring. When my bees are put into the cellar every hive is weighed; then the regular entrance is placed next to the wall, and the body of each hive is loosened from the bottom-board, and, with the hive-tool, is pushed backward until the same width of entrance is secured at the back of the hive. My cellar is so constructed that I can keep the temperature within one or two degrees of 45 continuously until the bees are put on summer stands. I have not lost a colony since I have first used this method; and last spring, which all know was a severe one on bees in this locality, my bees were as strong when removed from the cellar as when put in; and they were all strong enough to gather a nice surplus from fruit bloom and dandelion. Perhaps it will be as well for me to say that I have very little time during the season to attend to my bees, and that is the main reason why I had to study out some plan to get the best results in honey from them.

I am so situated that I have to drive five miles all the year round to my place of business, rain or shine; and when it is time for bees to leave the cellar it is my busiest time also. Since I have adopted the ventilation outdoors and in, I have not had ten swarms per year from 100 colonies; yet I run my bees chiefly for comb honey. When very hot weather comes I use the wedge as illustrated in GLEANINGS some two years ago. When it gets to be 100 in the shade, as it does here most summers for a time, each hive is raised at the back with a wedge the same as at the sides. This appears to be all the ventilation needed for the bees to keep on working, no matter how hot it gets. If this ventilation is allowed to remain for the rest of the hot weather, according to my invariable custom, the bees will use it as an entrance, providing they are well supplied with a strong working force of bees. Then if enough room for storage above is given them they will not swarm—at least that is my experience. Always let this ventilation at the back remain until there is danger of robbing, then go along and remove the wedge.

Le Mars, Iowa., Nov. 24.

THE CHICAGO-NORTHWESTERN CONVENTION.

BY R. F. HOLTERMANN.

The above association held its thirtieth annual meeting at Chicago recently with G. W. York, the president, in the chair. The convention in one respect was like our recent Ontario meeting. It spent a very considerable time over the question of foul brood (American and European), and the convention was unanimous in its desire to secure legislation for the State of Illinois, by means of which it could secure authority for the inspector to examine colonies of bees, even if contrary to the will of the owner; also to authorize the inspector to destroy badly diseased colonies. It appears the State has, up to the present, no such law.

TREATMENT OF EUROPEAN FOUL BROOD.

Doctor Miller gave the following condensed treatment of European foul brood: Brush from all but one comb of brood the bees. Allow this comb to remain in the hive, putting beside it two empty combs. When eggs are found in one of these combs take out the original comb. Take away the queen; ten days later destroy all queen-cells and give the colony a virgin queen. Dr. Miller recommended making colonies with European foul brood very strong. Mr. Cavanaugh suggested shaking the strongest diseased colonies, giving the brood to weak diseased stocks, strengthening them, yet not increasing the number of infected combs.

BETTER-KEPT BEES.

Is it better to keep more bees or to keep fewer bees better? This was a question before the convention. A member said, keep more bees and keep them better. It was al-

so stated that badly kept bees are a menace to the good bee-keeper on account of the foul-brood danger.

W. Z. Hutchinson stated that the idea that many had (that the one having many colonies of bees must neglect them) was not so. He had traveled about a good deal, and found that, when a man had many colonies, he was more likely to look after them, his attention is drawn more to them, and he becomes more interested in that line.

POLLEN IN SECTIONS.

A method was given to remove pollen from sections. Take a toothpick, break down the comb about the pollen, and break into the pollen and return the section to the hive. The bees will remove the pollen.

SIZE AND KIND OF HIVE.

This question came in for consideration. One who had several hundred Heddon divisible-brood-chamber hives, and had used them for many years, stated that he found the divisible feature a weak point in outside wintering. What next? Here I had almost become a convert to the divisible-brood-chamber hive because I had been told and believed that the above was a strong feature; also that bees in such a hive would build up better in spring when a man of long and wide experience states the first is not correct, and Mr. Townsend, in GLEANINGS, states that the bees in such a hive do not build up as quickly in spring. Such divergent conclusions only go to show that a government apiarist, who is only a man after all, had better leave tests along such lines alone, for in that capacity his experience must be very limited compared with men we know of who come to diametrically opposite conclusions. We do not find other departments testing and giving out orders of merit in reapers, mowers, plows, manure-spreaders, etc. The bee-keepers, in my estimation, can get better value for the money expended in having the governments—federal, dominion, state, or provincial, carry on experiments where equipment and time needed make them beyond the bee-keepers' reach. The number in favor of the large hive showed an increase.

A question was propounded as to what constitutes an eight or ten frame hive; and to settle this question for all time a vote was to be taken. Some claimed that, if the super was used as a brood-chamber, then the number of frames in the lower story no longer constituted the size of the hive. The convention voted contrary to this idea.

HOW MUCH WAX IN TEN LANGSTROTH COMBS?

In reply to this question it was stated that N. E. France had secured 3 lbs. of wax from ten Langstroth combs. Holtermann stated he had no doubt this was correct, for he had experimented in this direction, weighing the wood frames, then putting 2½ oz. of foundation (a full sheet) in each frame. Upon weighing the combs after completion he had found that the bees had added 2½ oz. of wax to the foundation in each comb, thus completing it. This would make a total of 3 lbs. 2 oz. of wax to a set of ten combs.

COLOR OF BEESWAX.

Quite a discussion took place on the above subject. One member was prepared to swear that the bees secrete yellow wax when working on the goldenrod; but when the convention wanted to know upon what evidence he was prepared to swear, he did not give a very satisfactory answer. The point was, did the yellow color come from the pollen after the scales were secreted? Some one stated that the wax would be according to the color of the honey. This was easily disproved, from the fact that buckwheat honey gives white wax. Dr. Miller stated that, contrary to some high authorities, he found that wax is sometimes, at least, quite white. He had taken virgin comb and melted it into a small cake when it was still white.

Brantford, Canada.

A BIBLIOGRAPHY ON BEE-KEEPING.

BY DR. E. F. PHILLIPS,

of the Bureau of Entomology, Washington, D. C.

It may be stated with little fear of contradiction that we all write too much, not only concerning bee culture but on all other subjects. It is impossible, however, to stop the increasing current of bee books and pamphlets, and articles in bee journals, and it becomes necessary to devise some way to keep track of what is written, not only to aid in keeping up to date on the subject, but to prevent the repetition of work already done and to check up various claimed discoveries. The need of a bibliography on bee-keeping has been very strongly felt in connection with the work of the Bureau of Entomology on apiculture, and to satisfy this need at least partially such a bibliography has been begun. I shall here attempt a brief description of it for the benefit of those who may desire to start something similar.

All records are made on cards (linen ledger paper) 12.5 by 20 centimeters in dimensions (approximately 5 by 8 inches). This size was chosen rather than the 3-by-5-inch cards usually used in libraries because of the need of space for abstracts and notes, and also because cards of this size are used for the records and notes of the office, and the subject bibliography cards can thus be arranged right with our own notes. All reference cards are made at least in duplicate. One set of the cards (blue) is arranged in alphabetical order under the names of the authors, and another set (yellow) is arranged according to the subjects treated. In case an article treats of two or more subjects, as is often the case, separate yellow cards are made for each subject. In the case of books devoted exclusively to bees, the subject catalog is not attempted, for it would be an endless task. In all such cases the yellow cards are filed in the drawer containing the book catalog. For example, Dr. Miller's "Forty Years Among the Bees" is cataloged thus:

Miller, Charles C., M. D.,
1903. Forty Years Among the Bees. Chicago: George W. York & Company; 327 pp., 111 text figures; 13x20 cm

The blue card containing this record is filed under Dr. Miller's name, and the carbon copy on the yellow card is filed in the book catalog under 1903. Both cards are stamped "Book," so that in case either is removed from the files it can easily be replaced properly. The size of the book is given in centimeters rather than to mark it octavo, since such designations vary greatly in their use.

In the case of articles in journals the name of the journal takes the place of the publisher in the case cited. Anonymous publications are filed in chronological order in a separate place. All articles by one author are arranged under his name in chronological order in the authors' catalog.

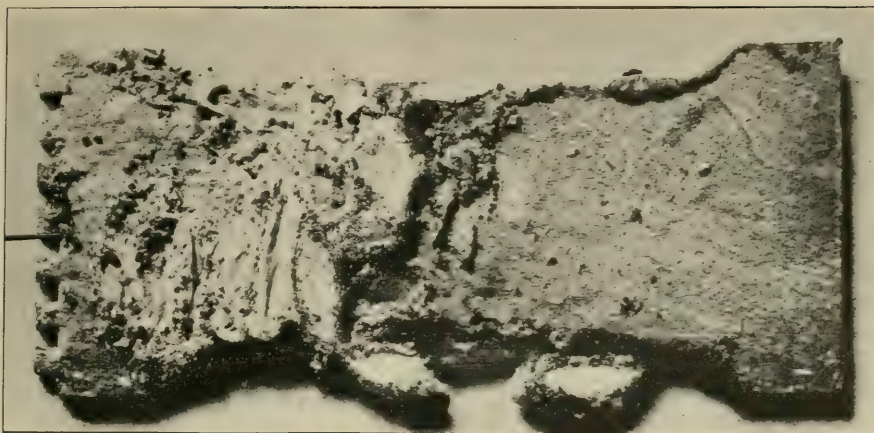
In some cases references are obtained which do not indicate under what subject the yellow card should be filed, in which event the two cards are fastened together and filed under the authors' catalog until the article can be looked up.

In case an article is of enough value to warrant an abstract or translation (in the case of articles in foreign languages) these are either written on the yellow (subject) cards or on thin paper cut to fit envelopes which are just the size of the cards. On these envelopes is written the bibliographical reference, and they are filed under the proper subject. For example, in our bibliography on disease we have translations of all the important foreign papers on this subject, and numerous abstracts and notes on the subject cards where the articles are of less importance. In this way the subject catalog becomes an important storehouse of information.

This bibliography was begun about two years ago, and now contains between 16,000 and 18,000 titles. The Drory bibliography has been copied complete; the DeKellar bibliography, which is very inaccurate, has also been included; but the titles and references are corrected in many cases. The Taschenberg catalog of articles in journals has also been included as well as numerous smaller lists. In each case the source of the reference is stamped on the card, so that any errors can be traced to the proper source. Where the references are made directly from the books or articles, the cards are stamped "Verified." The available bee journals are now being cataloged. This is an enormous task, but is proving of great value. Numerous articles not directly on bees, but which are used in our work, are also included in the bibliography.

All of this indexing means lots of work for the winter months, but we are fully repaid by the ease in finding literature that we need. Unfortunately these cards are not available to other workers in bee culture, but will be freely accessible to any one desiring to consult them in Washington. Naturally they can not be sent away from the office.

To publish such a bibliography would be very expensive. It is constantly growing, so that it should be printed on cards so that new titles could be inserted in the proper



A sample of how the eggs and cocoons of the bee-moth are deposited on wood. Sometimes the wood is grooved or eaten out. The illustration fails to convey the real filthiness of the mass.

place. Perhaps this never can be done; but at any rate we shall aim to make it a bibliography which will serve our purpose in the work of the Bureau, and it may be of use to those outside who are in a position to consult it from time to time.

Bureau of Entomology, Washington, D. C.

MOTHS DESTROY ENTIRE COLONIES.

BY C. E. MILLARD.

I have 40 colonies of the common American brown bees. Since July 1 the worms have destroyed seven hives, and by next swarming time they will no doubt destroy the entire lot unless I can find a remedy.

If you think that another breed of bees will be any advantage I will change stock. To be sure, I do not see how this would help; but I refer the matter to you. What I have are doing well except for the worms. But they are something fearful. I send you a sample of the worms and also a piece of a section, that you may see the form of the pest and the nature of their ravages. It hardly seems possible that, in so short a time, there could have been so many worms, and that they could actually cut away the *solid wood* as they have done. Parties who have seen the condition of things are amazed.

Ravenel, S. C.

[The whole trouble is due to lack of care, especially among queenless colonies. Since the Italian bees have replaced the old-fashioned black bees, most of the trouble with moth-worms has disappeared. Your easiest remedy will be to destroy your old black queens and get full-blood Italians. As soon as they hatch out they will go to work cleaning out the worms. Meanwhile overhaul all your hives and cut out all of the worms and cocoons, and do a regular cleaning-up; then follow it up until the young Italians get out and take the job off your hands. Probably

the moth-worm has been allowed to develop to an unusual extent in your locality. Get other bee-keepers around you to turn in and help get rid of them. A very little earnest work every few days will get them entirely out of your hives and out of your apiary. We had lots of experience along this line, years ago, before we had Italian bees. See editorials.—Ed.]

PERFECT COMBS WITHOUT FOUNDATION SPLINTS.

Foundation in Brood-chambers Should be Drawn Out Only by Weak Colonies; the Super the Proper Place for Comb-building in Strong Colonies.

BY G. C. GREINER.

Whenever the subject of foundation-splints has been discussed in our bee-periodicals I have been wondering why it was necessary that these splints had to be used at all. Mr. Green's article on page 562, with its various theories and suggestions, gives this matter a new impetus, at least with me. It induces me to offer a few remarks on this subject. I do this, not for argument's sake nor to invite any controversy. I have no time to waste for that purpose, but I wish to present a few facts along this line.

After reading Mr. G.'s article I examined a dozen or more drawn-out combs from the brood-nests of as many different colonies and the same number of drawn-out combs from my extracting supers, but failed to find any stretched combs with elongated cells, as Mr. G. describes. I knew the result quite well before, but I did it to make doubly sure I did not misrepresent or make false statements. It does not seem possible to me that different localities and climates could produce such contradictory results; but I am convinced that the difference is all in the management.

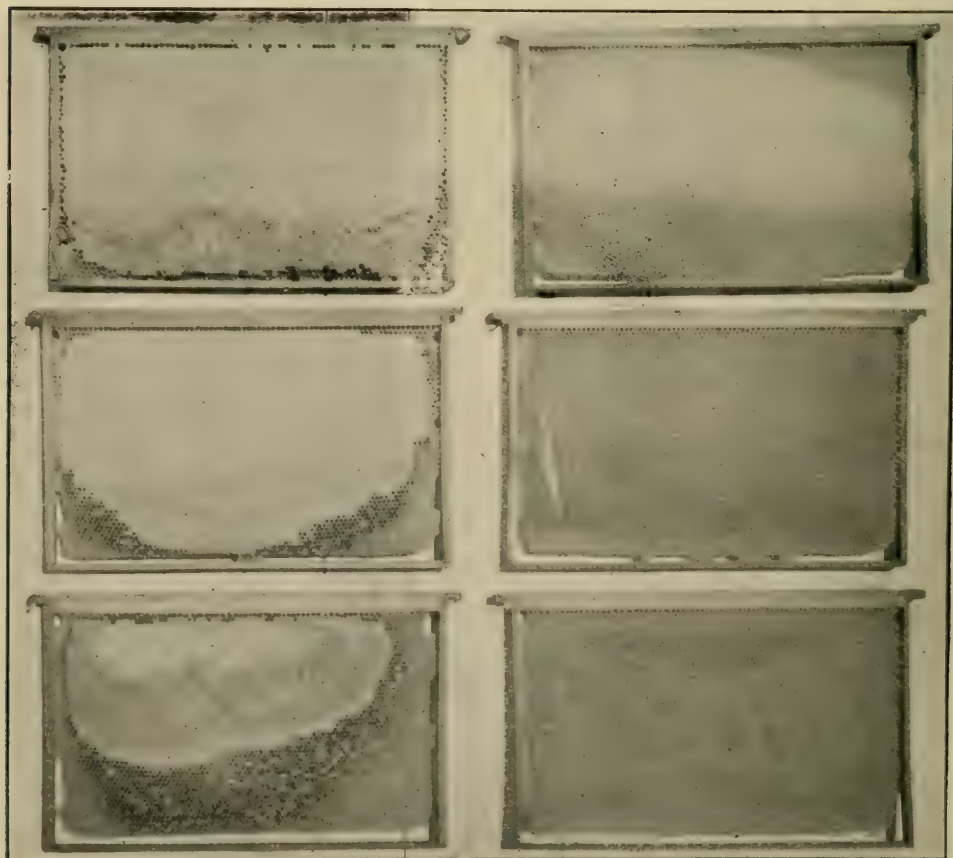
I have, during the last ten or fifteen years, used more or less foundation yearly; and this last summer, being a little short of extracting-combs, I again had 25 lbs. transformed into combs, and, strange as it may seem, there is practically not a sagged comb nor a stretched cell in the lot. I use, both in brood-chamber and extracting-super, what is called the Jumbo frame. Being $10\frac{1}{8}$ in. deep in the clear it is probably the deepest frame of the flat pattern in use. Then I use full sheets of foundation 16 in. long by $9\frac{3}{4}$ wide, supported by three horizontal wires. This arrangement, according to Mr. Green's opinion, should give foundation the best chance to sag and produce the dreaded elongated cells; but it does not in my case, and why? I don't know that I can point out the exact cause, but here is my way of using foundation:

With the exception of a little experimenting years ago, when the use of full sheets of foundation in the brood-chamber was in its experimental stage, I have always strung my wires as tight as the wire and frame will bear. They fairly sing; and to produce this condition I use No. 28 wire. No. 30 wires would

not hold together under my treatment. They would snap off with every frame I handled. The directions for slack wiring to allow for the inevitable sagging, which Mr. G. cites, are contrary to my many years of experience.

Next I use medium brood foundation only. When we were advised to use light brood foundation in the main frame on the ground that it is more economical than the heavier kind, giving more square surface to the pound, I also experimented quite a little in that direction; but one season's experience satisfied me. It was buckle and sag, and sag and buckle all through the season, and I came to the conclusion that it would be poor policy to economize in one direction and then lose double and triple in another by being annoyed by the detrimental effects of elongated cells next to the top-bars. Mr. Green has plainly stated the results on this point.

Another feature that may have some bearing on the no-sagging inclination of my foundation is this: I never fill my frames in cold or even cool weather, but wait till later in the season until about the time when I want



Foundation, when built out into combs by Greiner's plan, results in perfectly straight combs, even though only three wires are used in a Jumbo frame.

to use my frames. It frequently happens that I fill a few dozen frames in the forenoon and use them in the afternoon. The weather is generally at its best in regard to temperature about that time. The honey-house in which I do this work is often as hot as an oven, to use the phrase, and foundation handled under these conditions has stretched about as much before it is put in the hive as it ever will or can thereafter.

Furthermore, I manage as much as possible to let my weakest colonies do the drawing-out. The excessive heat in the brood-chamber of very populous ones, together with the heavy load of bees, might possibly cause some sagging; but I aim not to use such colonies for that purpose. If I am compelled to use foundation with strong colonies I let them draw it out in the extracting-super, where sagging or stretching is not so likely to take place.

But, say what we may, all our theories and suggestions are of little value unless we have some show of facts to sustain them. As a proof that all I have said and claimed in the foregoing is based on a pretty solid foundation of facts I herewith present to the readers a photograph of a variety of combs which were drawn out from foundation last summer. They are not selected to favor my argument; but I have taken about the first ones I ran across.

The three combs on the left are more or less full of honey, and capped. On account of the cappings the shape of the cells is not readily discernible; but the dark streaks between the rows of cells can be plainly seen. They are as straight as a chalk-line when being snapped. But there is another proof that the foundation has not sagged. The space between the lower edge of the foundation and the bottom-bar of the two lower combs is as nearly even, clear across the frames, as it was the day the foundation was put in. Wouldn't this space be a little contracted in the middle if the foundation had sagged, and had caused elongated cells next to the top-bar?

The second or middle row contains empty combs used in the extracting-supers. They are now cleaned out by the bees, and show the shape of the cells very plainly. It takes more than ordinary mechanical skill to detect a difference between the shape of cells on these combs and the original impressions on the foundation on which these combs were built.

The manner of fastening the foundation to the top-bar may not have any bearing on the sagging question, and it may. I never fancied the groove-and-wedge plan very much, but did it in the old-fashioned way by running melted wax on both sides along the joint. After the joint is "soldered" up on one side, a much better job can be done on the other. Undoubtedly the wedge plan will do the work a little faster; but if we have the right tools, have our wax at the right temperature, and have once acquired the knack of doing it, frames can be filled at a very fair rate. This point can not be dis-

puted. While the running-on wax strengthens the joint, the pressing by the wedge weakens it.

La Salle, N. Y.

[At the time Mr. Greiner wrote, he was doubtless unaware of the fact that he was confirming the position taken by W. Z. Hutchinson, in the *Review*, that *medium* brood foundation and horizontal wires drawn taut, or until they sing, solve the problem of the sagging in the foundation and a consequent buckling between the wires—solve the difficulty of elongated cells near the top-bar and filling the same with drone brood.]

But the question that still remains to be settled is this: Whether the use of *light* brood foundation and *more* horizontal wires or wooden splints, *a la* Dr. Miller, would not be cheaper and just as free from the objectionable sagging. It is our opinion that they would. Although we do not know positively, we are beginning to think that more strands of horizontal wires drawn taut, and *light* brood foundation, will not only be cheaper, but give us combs that will be vastly stronger than those supported by splints or by three horizontal wires. It may take more time to put in the extra wires; but when one is at the job the actual increase is only very small.

The melted-wax plan of fastening foundation to the top-bar as described by our correspondent is satisfactory in the hands of one who knows how to use it; but it is far from being that in the hands of the average person or novice. For all such the double groove and wedge is preferable. Indeed, it is quicker, better, and much neater for even the expert.—ED.]

SHIPPING BEES IN POUND AND HALF- POUND PACKAGES WITH- OUT COMBS.

The Possibility of Shipping Bees Without Carrying Disease.

BY E. R. ROOT.

Some twenty-five years ago there was quite a business in selling bees in pound packages; but owing to the difficulty of delivering them alive to destination the business was given up, and from that time on until very lately bees have been shipped out only on combs. In late years foul and black brood have become so prevalent over the country that it seemed desirable to try the old-fashioned plan of shipping the bees without combs in order to avoid entirely or at least minimize the danger of carrying disease. Foul brood is transmitted mainly through combs, honey, and brood. If these three are eliminated in shipping bees and queens, the chance of transmitting disease, even from an infected colony, would be very slight. For the last year or so, we have been trying the experiment of shipping combless and broodless bees in little light wire-cloth packages all over the United States; and by chang-

ing the package somewhat, and by giving the bees a good feed of syrup just before starting on their journey, the loss during shipment has been almost entirely eliminated.

It occurred to us that if we took the old pound package of years ago and placed therein a series of slats so that the bunch of bees would have something on which to cluster without having to hang to each other, as in a swarm, one difficulty, at least, could be overcome, for in the old pound cages there was no form of support except at the top and sides. The consequence was that the bees were obliged to cling to each other anywhere from two to five days continuously, depending on the length of the journey. This, it seemed to us, caused unnecessary bodily strain on the bees. As we wished to avoid the use of combs for the reason named, we made artificial supports of sawn slats that answered in lieu of a comb; then after putting the bees in the cage, and just after they start on their journey, we give them a feed of thick syrup—enough to fill their sacs full. This renders it unnecessary for them to draw on the queen-cage candy already in the cage; for we calculated that the supply of syrup in the honey-sac of each bee would furnish a form of sustenance that would be safer and better than queen-cage candy, which, to say the least, is an unnatural food.

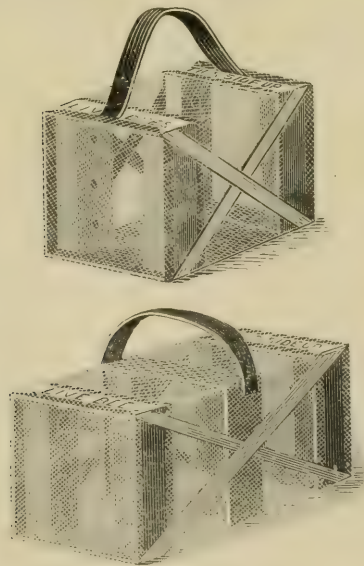


FIG. 1.

The form of cage which we use is shown in Fig. 1. The illustration, however, does not show the series of slats running lengthwise through the cage, and on which the bees hang for support while *en route*.

The question may be asked how the bees are fed through the wire cloth. This might be done in several ways; but the plan our apiarist adopted was to paint the syrup around the wire cloth until the bees had

taken up a liberal supply for the journey. They could be fed another way by inverting a Mason jar containing syrup covered with cheese cloth, and placing the jar and cloth, when inverted, on the wire cloth. But this would be a slower process, and would be no better in the end.

It may be interesting to the reader to know how bees are prepared for shipment in such packages. In the first place we have a wire-cloth swarm box capable of holding anywhere from six to eight pounds of bees. Through the top of this is a square hole large enough to admit the mouth of an oblong tin tunnel, which is of such shape and size that a frame well covered with bees can be shaken in it; and the bees, as they fall off, slide down the smooth surface of the tin into the swarm box below. One or two frames may be shaken from any particular colony. If we expect to put up a dozen packages we may shake some four or five different colonies, one, two, three, or more combs as the hive can spare. But the beauty of putting up bees in this form lies in the fact that we are not obliged to take them *all* from one colony; and, as we shall show, the queen to go with each package may be taken from an entirely separate colony or nucleus. When shipping bees on combs in the nucleus form it is necessary to take both queens and bees from one hive; but the bees and queens in pound packages may come from half a dozen colonies. In well-regulated apiaries there will always be a few colonies that can spare a few bees without detriment to their brood better than others; accordingly, when we fill up this swarm box or wire-cloth cage we draw from those stocks that can best afford the bees.

But perhaps the reader may ask how we keep them from fighting; and then if we take a queen from one hive, and the bees from two or three others, how we prevent their killing the queen. All this is very simple. After the requisite quantity of bees has been shaken into the swarm box, as shown in the different views of Fig. 2, the tunnel is lifted off and the opening closed with a slide. The bees are then put away in a cool room and left there over night. In the meantime a Mason jar containing sugar syrup is inverted over the wire cloth of the swarm box so the bees can take syrup through the night. The next morning this box of bees is taken over to the workshop and placed beside the various pound cages that are to be filled with bees. One of the cages is placed on a pair of scales. The bees are given a jouncing on the floor so they will be dumped in the bottom of the swarm box *en masse*. They are then scooped up by dipperfuls and dumped in the cage until the dial shows one pound or half a pound, as the case may be. The cover of the cage is then put on, when another package is filled in a like manner, and so on until all or nearly all the bees from the aforesaid swarm box are put in various packages. The next operation is to take the queens one by one from as many nuclei of the grade and price required, and, by lifting the wire-cloth covers at one corner, run them in one by



Fig. 2.—The method of shaking bees into a swarm-box preparatory to putting them in pound cages without brood for shipment.



Fig. 3.—Shaking bees off the combs of baby nuclei late in the fall for the purpose of strengthening weak colonies in the same yard.

one—that is, one queen in each pound package.

The last operation of all is to dip a brush or rag into thick syrup and spread a thin film over the wire cloth. Care should be taken not to give them too much. If wire cloth is left dauby they will not go through alive.

Now, then, to answer the question why the bees do not fight or kill the queen. When bees are shaken into a box and made queenless, combless, and broodless, and kept confined over night, and fed sugar syrup,

they will be in a mood to accept *any* queen; and then, moreover, when they are shaken from several *different* hives, the colony odor is destroyed, and the absence of the queen, of brood, and comb, makes them fairly cry for something; and when that something is in the shape of a fertile queen she is accepted readily because of their dire distress.

Our Mr. Pritchard believes the mixing of *several* lots of bees has a tendency to make them more kindly disposed toward the queen, or to stay in a new location, than when all come from one hive; but our Mr. Bain thinks this makes no difference—that it is *confinement without comb or brood* that destroys their colony spirit, or that spirit that would resent the placing among them of a strange queen.

UNITING BEES IN THE SPRING OR FALL.

At the close of queen-rearing, perhaps in the fall, we usually have a lot of baby nuclei containing a few bees. It is impracticable to unite them in the ordinary way, and much less to winter them as they are.

Last fall Mr. Bain shook or brushed the frames of these babies into the swarming box as seen in Fig. 3. When the box was fairly filled he closed it up, put it in a cool place, gave its bees a feed of syrup, and left them over night. The next morning the box was taken around to a hive that was a little shy of bees, and jarred on the ground to get all the bees in the bottom. They are next wet down with water from a brush or broom to keep them from flying. He then took a dipperful or two and dumped them in the entrance. This was done in the cool of the morning—



Fig. 4.—How bees are dropped from the swarm-box in front of entrances of colonies needing a few more bees for winter.

sometimes when it was so cold that the mercury was almost down to freezing.

In Fig. 4 it will be seen why the bees were bunched up and run into the hive. Strange as it may seem, they will all stay in their new quarters; and, what is more, they will take up with their new queen-mother. It comes to pass, then, that, instead of losing these babies as formerly, we can use them for strengthening up colonies in the same yard that are not quite strong enough to go through winter. The plan is so successful that the problem of uniting bees in the same yard, and making them stay in their new quarters, is practically solved.

It was Mr. G. M. Doolittle who, something over twenty-five years ago, advocated this plan of uniting. He found that, by shaking bees into a wire-cloth cage, and confining them in a cool place, he could do with them what he could not otherwise accomplish; but if we are correct he never went quite so far as to take the bees from a swarming-box like this and apportion them out among half a dozen colonies; but both Mr. Bain and Mr. Pritchard have proved that they can do this, although the plan pursued by the latter is slightly different from that of the former. Mr. Pritchard believes it is necessary to mix several lots of bees together, shut them up for an hour, wet them down, and dump them in front of baby nuclei which he wishes to supply with bees. Both Mr. Bain and Mr. Pritchard are agreed that *running bees through the entrance* is an important part of the procedure in making them stay in their new quarters. To put them on top of the frames will not answer.

In this connection Mr. Pritchard thinks that a thorough jouncing and shaking will put life and energy into loafing bees as almost nothing else will. Mr. Bain is not sure that this is so.

A PROBLEM IN WINTERING.

BY F. DUNDAS TODD.

This is the story of a failure, of a two-thirds loss in a mild climate, but of an exceptional winter in this respect when, for about ten days in January, the thermometer was near zero while a very strong wind prevailed, and then followed a decidedly cool spring with the temperature daily reaching almost to the flight-point, but rarely attaining it. Theoretically, wintering in such a region as Vancouver Island should be a problem of easy solution, and some years it is so; but there are others when the losses are very severe. Again, different men have different experiences in the same season. For example, my nearest bee-keeping neighbor lost 30 per cent; the next, half a mile away, 60 per cent; another near him, 7 per cent; one four miles away, 50 per cent, and much the same way with others to whom I have talked.

To show still further contrasts, two years ago one bee-keeper, in packing his bees for winter, after putting in the material for one

hive in an empty super above, forgot to put on the cover. It was a mild winter, only one morning's frost, and that was in March; but there was the usual winter's rain. However, the hive came through swimmingly—not swimming—the bees apparently enjoying the luxury of two entrances, the extra one, of course, being above through the packing. But in the same season an old-time and very good bee-keeper not a dozen miles away lost eleven out of a dozen hives, supposedly through honey-dew.

The most interesting feature about a failure is its cause, and that is the hardest thing to locate. Looking at the facts in the first paragraph, an easy-going mind would instantly say "season," and let it go at that. But in the midst of so much failure there are successes to be accounted for, and so it is our business to eliminate, as far as we can, the common factors, then duly consider the differences so that we may learn the secret of success. For almost a year I have gone over, hundreds of times, every detail of my own management, considering nothing as too trifling or unimportant compared point by point with other bee-keepers, and feel I have narrowed the problem to two propositions, perhaps only one, and I want to submit them to readers of this magazine for their consideration, and perhaps get definite decision as to their merits.

First as to hives. As readers already know, I at present am experimenting with the divisible hive, and, as far as possible, have transferred all my purchases into that style; but in the fall of 1908, out of 20 hives packed for the winter, two were eight-frame Langstroths several years old. The other 18 consisted of 6 colonies in double divisions; 12 colonies in single division, each division containing eight shallow extracting-frames.

As is the custom here, the hives were wintered on the summer stands, but they were wrapped in tar paper—a precaution supposed to be unnecessary. The bottom-boards had 1¾-inch rims, the entrance being filled with a block of wood in which was cut out a smaller entrance ¾×3 inches.

I had started with nine hives, of various styles and ages, but had transferred in July and August to the divisible frame, too late as I afterward learned, since the honey-flow stopped before the middle of July, and there was no fall flow. In the middle of July I had requeened five hives by young queens from one breeder, and a month later I got a dozen queens from a different breeder, and so had 17 young queens and 3 old ones. After the final transfer I fed hive syrup to each every day to encourage wax production and brood. In the middle of September I proceeded to feed up quickly, and by the 20th every hive had at least 25 lbs. of stores on hand, every colony being actually weighed so as to make sure. Two months later, just before starting on a trip to the Atlantic States, I weighed several of the hives again, and found an average loss of four pounds, so I felt satisfied every thing was all right.

I got home Dec. 31, but no bees were fly-

ing as the weather was too cold. On Jan. 4 a cold wave struck this locality and lasted for about 10 days. About the 25th, bees were flying from most of the hives; and on the 27th, since a number were suspiciously quiet, they were examined and found to be dead, absolutely without honey and pollen. The others were glanced into, and found mostly to be on the edge of starvation. Then began a long weary fight with spring dwindling. In this I learned something about spring feeding in a cool climate. I tried feeding syrup from below, and discovered that the bees will not touch syrup so presented unless the air temperature is above 50°. Then I made candy, which was all right, and fed many pounds on top of the frames; but the quickest results I got was by giving soft brown sugar, Demerara or Porto Rico, in a frame affair set in the hive to one side of the brood-nest. Had I had a Doolittle feeder I would have tried it. But the bees needed pollen as much as sugar, and this I could not give them. For weeks the thermometer never rose above 48°, and, though willow blossoms were plentiful from Feb. 22, the pollen famine continued until well into April. Often I wished Dr. Miller or some other bee genius would invent a method of feeding rye flour in the hive.

Here is the mortality record for the various styles of hives. Langstroth: Original number, 2; died of starvation, 0; spring dwindling, 1; per cent of loss, 50.

Two division: Original number, 6; died of starvation, 0; spring dwindling, 3; per cent of loss, 50. One division: Original number, 12; died of starvation, 6; spring dwindling, 3; per cent of loss, 75.

All classes of hives, it will be seen, lost heavily; but a little explanation will modify these bald figures a little. The two Langstroths had stores of honey, even at the end of March. On March 18 one was in good enough shape to tempt me to put a weak hive on top, and a week later I found the queen in the upper division had begun to lay. April 2, flight looked very scanty, so I examined the lower division and found a big heap of dead bees on the bottom-board—no bees on combs, and not a scrap of pollen in frames; but there was about 2 lbs. of honey. On combining by the Alexander method I put wire netting above the excluder for two days, and had fed above a pint of syrup every night for a week. In other cases I had found this method seemed to work all right.

The story of No. 23, a double-division hive, is worthy of record. It was rather familiarly known as "skiddoo," and almost "skiddooed;" but now it is called rather profanely "resurgam." Feb. 11, seeing no flying bees I examined the hive and was astounded to find a lot of apparently dead bees without a scrap of stores, either honey or pollen. I picked up frame after frame, each covered with dead bees—not a tremor of leg or wing being visible. A few fell into the hollow of my hand, and, acting on impulse, I breathed on them for a few minutes, then I saw a few legs move a little. I hunted for the queen,

and, finding her, tried the effect of breathing on her majesty. I fancied one leg quivered a little, so I replaced the combs in the hive, placing the queen with a loose handful of apparently dead bees on top of the frames. I put the hive on top of another colony with wire netting between. Lastly I mixed honey with water, and trickled over the bees and combs, then put some candy on the frames.

I was not hopeful of any good results, but next day I was much astonished to find the bees very much alive; and two days later the hive was replaced on the old stand. It simply kept alive until March 27, when I found a little brood; so I gave it a little sealed brood to help along with young bees. April 7, having bought some more hives I put it at the top of one of them for three days, then moved the old hive to a new stand. It advanced right along, and by the end of the season no hive had more honey-dew in its combs than that had. My notebook says 40 pounds.

But for a happy thought, No. 23 would have been among the dead, and the percentage of deaths of the two division hives would have been 66—that is, nearly equal to the single-division colonies.

My friend Mr. Russell wintered his hives pretty much as I did; and in comparing notes we arrived at these general conclusions:

The one-division hive was as successful as the two-division one.

A deep-rim bottom-board was as successful as a shallow one.

Since one of the oldest bee-keepers in this locality has frequently wintered on 12 lbs. of stores, and once on as little as 10, our 25 lbs. per colony ought to have been sufficient.

Our best results, but not numerous enough to justify generalization without other evidence, were with the hives that had not been transferred.

We could not blame the strain of bees; for in my own case two out of three of the old queens died, all the first importation of young queens, and five out of the dozen of the second lot.

We believe there was no honey-dew in our hives. I had fed an average of 15 lbs. of sugar to each.

The almost complete absence of pollen in the frames, although much was carried in during the fall months, led me for a long time to think that the young queen in the mild weather of November and December had bred freely, and so used up the stores. The bountiful supply of dead bees on the frames still further confirmed this suspicion. But in the course of my reading I stumbled on another idea which, the more I think of it, appears to be the best explanation of my failure in wintering. It is found in "A Modern Bee-farm," by Simmins, who emphatically advises that only old brood-combs should be used for wintering, insisting strongly that the cocoons and other matter in the combs prevent the conduction of heat, whereas pure wax, as in new combs, permits the heat to disperse rapidly, and the bees soon

use up their stores to generate sufficient warmth.

The only complete sets of old combs were in the Langstroth hives, and these were the only ones that did not need to be fed. After noting Simmins' warning I examined all the combs in the dead hives and found that very few of them had been bred in—in fact, they were hardly travel-stained. This disposed of the breeding-up theory.

So, after long consideration I am of the opinion that new combs is the real explanation of my failure in wintering; but I will gladly welcome any evidence to the contrary, for I am well aware that some bee-keepers advise the frequent discarding of old combs in favor of new; but I have not in the course of my reading found any one who recommended that bees be wintered on combs that had never been bred in.

For the winter of 1909 I have tried, as far as possible, to have the bees on old combs, though not as completely as I would like, as I transferred practically all my new purchases, and, besides, have had to contend with the additional handicap of a blank season. But I am wintering six Langstroths with undoubted old combs, and am awaiting the results with considerable interest.

Victoria, B. C., Oct. 20.

BEE-KEEPING NOTES FROM TEXAS.

A Series of Articles in Answer to Numerous Enquiries.

BY LOUIS H. SCHOLL.

INTRODUCTORY.

Letters by the score, regarding Texas as a honey-producer, and many other questions relative to bee-keeping in the great Lone Star State, together with several requests from many, and, lastly, a request from the editor, have prompted the writing of a series of articles for GLEANINGS for 1910, with the hope of answering all these enquiries as far as it is possible to do so, and fulfilling the requests so often made.

Texas has grown, is growing, and will continue to grow, not in area, for she is big enough in that respect, but in every thing else imaginable, for she is making greater strides now than ever. In this, bee-keeping must be included, for that, as every thing else, has progressed until now it has placed the great Empire of States in the lead, ahead of any other in the Union. We are not saying these things to boast, nor have we an ax to grind or something to sell, but merely because they are facts for which we have been asked, and to give the information sought by so many.

While many of the localities are already taken up and some of them overcrowded, to the detriment of the bee-keepers, there are others that are entirely unoccupied. To prevent the influx of new comers continually settling in parts already occupied, and aiding in a better distribution of such into new

and better localities, for the benefit of all concerned, shall be the aim, in part, of these papers, which will follow in rotation as space permits. Besides information about Texas and the bee-keeping localities, articles will follow on subjects like the following, which should be of interest, not only to those who are interested in Texas bee-keeping, but others as well, as these will embrace methods and management that are applicable to other localities as well as in Texas and under Texas conditions. These will be mostly formulated after our own extensive work with 20 apiaries scattered from a few to several hundred miles from the center of operations, and with an experience in this State of nearly twenty years of bee-keeping.

The series that will receive attention throughout the present year are about as follows: "Texas, what she is as a honey-producer;" "The widely different and varying localities in Texas;" "Some of the advantages of Texas over other honey-producing States;" "Something about Texas honey-yielding plants;" "The kinds of honey produced in Texas, and why;" "Bulk comb honey and its extensive production;" "Texas from the standpoint of queen-rearing;" "Why the ten-frame hive is most used;" "The advantages of the divisible hive;" "Extensive out-apiary management;" "Getting the most for the honey crop;" with perhaps a few changes as needed.

By the aid of pictures and the use of charts and drawings it is our intention to make the reading-matter not only the more interesting but plainer, so as to be easier to understand. We shall be brief, yet try to cover the ground; and it is hoped that the readers who are interested in these notes from Texas will not only assure themselves that their subscription is kept up but will direct others of whom they know, who are or might be interested in this series, to subscribe for these numbers for the entire year, and thus not miss any of the copies. We call attention to this matter only so it may save others writing to us with numerous questions on these subjects that will be fully discussed in GLEANINGS during the year. It has been our desire to call attention to this series for that reason, and therefore this introductory has been written.

New Braunfels, Texas.

OUR EARLIER BEE-KEEPING.

Trials and Tribulations; Use of Comb Foundation; our Section-supers, etc.

BY F. GREINER.

My first real experience with bees dates back to the year 1872. When I had hived a swarm with the help of an old soil-tiller, and did it successfully, and without any special protection, my enthusiasm was kindled, and I began to think that I had the stuff to make a regular professional bee-man. The hives then in use here were box hives. No one in these and many other parts had even

heard of a frame hive. I remembered from my boyhood days a frame hive in my grandfather's house-apiary; for Baron von Berlepsch, simultaneously with father Langstroth, had constructed a frame hive already in 1856; but I had not yet formed an exact idea of the frame, the bee-spaces, etc., even after reading a bee-book of Dzierzon; and when I bungled up a sort of box hive with frames it was any thing but perfection.

In 1875 I saw the first properly constructed frame hive, and I, with my older brother, G. C. Greiner, well known to the readers, built several hundred such hives in the spring of 1876. Unfortunately, GLEANINGS had not yet found its way into our hands, and we were, in a measure, groping in the dark.

At the centennial exposition in Philadelphia, 1876, I saw the first sample of comb foundation. The article was rather inferior as compared to what our manufacturers turn out to-day with their complete machinery, their superior methods of cleansing and purifying wax, etc., but it was a long way ahead of no foundation at all. Up to that time, and for one or two years after, we had to (or did) get along with naturally built comb as starters in our honey-boxes and with wooden comb-guides in the brood-frames. Many a time we were forced to take old comb and cut it nearly down to the septum so as to serve us in our comb-honey supers. We had to be on the lookout for new comb constantly wherever an opportunity offered. During fruit-bloom was a good time to have strong colonies build us comb of the finest kind for starters; but this required close watching, and the hives had to be opened often and the comb cut out in order to get the start of the queens. The younger beekeepers, who have always had comb foundation to use as starters, both in brood-frame and super, would now consider it a great hardship if they had to get along as we did in those times.

However, we produced very fair honey, even under such adverse conditions. We were then using a nailed two-pound box, which was glassed on both sides after being filled by the bees. The package—wood, glass, and all—was weighed up and sold as honey. It was certainly not a losing game to put on the glass. Sometimes the sheets of glass were very thick and heavy. We never ordered such heavy glass, and our conscience troubled us not a little for hoisting this on the unsuspecting customer. We produced, during the years 1875, '76, '77, till 1885, many tons of comb honey, of which every box was glassed, and the gain thus made was considerable.

In 1877 we were only just beginning to use separators as an experiment. Tin separators were used by A. I. Root at this time and previously; but we had not found it out, and we were trying wood as the more congenial and natural. James Heddon and others argued that wood could not be used successfully as a divider; but in all of our trials it proved a success. We constructed several different

styles of supers with wood separators, for our open or undivided super did not please us, although we had little trouble in crating all the honey we produced with the help of them.

It is sometimes claimed that it requires more skill to produce good honey without separators than it does with them; but in view of the fact that we for several years, as beginners at that, successfully produced comb honey by the ton without separators—yes, and also without the auxiliary of comb foundation, this contention is without sufficient support—nay, it seems to me the greater skill is required to produce comb honey in our modern divided and sub-divided and cross-divided supers.

Before adopting a super which satisfied us during this earlier period, many of different styles were studied out; and after trying them we discarded them till we hit on the wide-frame single-tier super. Just about this time GLEANINGS came into our hands for the first time, and we found that A. I. Root had a double-tier wide-frame super already in use for several years. With this fact before us our confidence in our single-tier super increased to such an extent that we speedily changed all our stock of supers into this style—something which I never had the slightest reason to regret, although manufacturers have abandoned their wide-frame (double-tier) super for such of other constructions. The most or all of these newer supers do not protect the tops of the honey-boxes, and they at times become badly besmeared with propolis before being ready to be removed from the hives. The T super is the simplest and most inexpensive of all the supers before the public. It neither protects top nor bottom of the section boxes.

To be fair, I have given nearly all of the different styles of supers a trial. With me those parts of sections which are unprotected—in other words, are not covered up by either the bottom-bar or the top-bar—the sides of the sections being protected or inaccessible to the bees in all kinds of supers—have often, if not usually, become besmeared with bee-glue to such an extent that I could not properly clean them with a knife. I consider this a serious enough fault to condemn all such supers as leave either the tops or the bottoms of sections exposed to the bees; and I have gradually worked them over into wide-frame supers with the exception of some thirty T supers, which so far have escaped, although they are not expected to be put on the hives again in their present form. By mere accident two or three were put on last summer, and were filled also. It was a singular occurrence that a case of honey which I took to one of our groceries a few weeks ago came from one of these T supers. I had forgotten it; and when I opened the case I was greatly mortified to find such dauby-looking boxes. I believe I take at least as much pains as the average beekeeper in cleaning up my honey, and I remember very distinctly having used more "elbow grease" with this lot than with my

other honey, even using sandpaper; but to make a respectable lot of it was impossible. I had to give it up.

In favored localities, and with a good honey-flow making it possible to get the section honey off the hives inside of three weeks, reasonably clean honey can be and is being produced; but in my locality, and perhaps with my faulty management, I need something like a wide-frame super. Such a super has a further advantage over all other supers inasmuch as it provides that Pettit bee-space, not only at the sides but also at the ends; and the better filling of the end sections in the wide frames over those produced in T supers or the like is unmistakable.

The average bee-keeper is satisfied with such hives and other appliances as the supply-dealers see fit to offer; and if in any way they can get along with them they continue their use and say nothing. The more exacting go to work and make their supplies to suit their own notion.

I note with satisfaction that, in the catalog of 1909, a wide-frame super is listed, and I hope many will avail themselves of this opportunity and give them a trial.

During the earlier years of our bee-keeping we were rather unsuccessful as to wintering our bees. In the winter of 1880 we lost more than half of our colonies. We attempted to winter without protection (packing) on the summer stand. After some heavy losses we found that it was unsafe to winter bees thus outdoors in our climate. We succeeded quite well in wintering in cellars; also by packing our bees. My fifty chaff hives come through in good shape almost without fail each year. It makes little difference whether the bees are under sealed cover or whether a quilt is substituted under the packing instead of the inner cover or honey-board, as we used to style it. With ordinary winter supplies (stores) I little fear the winter. Only when our hives are crowded with honey-dew do we need to anticipate winter losses.

Naples, N. Y.

ITALIANIZING IN SOUTH AFRICA.

No Foul Brood; Can the Disease be Carried by Mail?

BY D. S. VAN WARMELO.

We have in South Africa two well-known kinds of honey-bees that gather and store honey—the yellow and the black bee. The yellow bee looks very much like the Italian, but is smaller, and has a more pointed abdomen with the yellow bands less pronounced to the end. The black bee is, as the name suggests, dark in color, and looks quite different. Both kinds are very vicious, the black one taking the cake, but is, although smaller in size, the better honey-gatherer according to most farmers.

Before the Boer war broke out, in 1899, I kept, as a hobby, the yellow bee in a few

Langstroth hives in Pretoria, and have only since the war made a special study of bee-keeping, on a limited scale, however, as I would not be allowed to keep an apiary in the town, however big and secluded my place may be. But on this account I considered myself in a good position to experiment with Italian bees, and imported a few last year. I also got some from the government to experiment with.

Some colonies of the native yellow bee are wild, and so this race might by selection be civilized in the course of many years; but it would, judging by the absence of outward signs, take a very long time, as it would be difficult to judge, even if the offspring of a mild queen, whether she has mated, for instance, with the drone of the colony that had been artificially stimulated to rear drones out of season; and, besides, the bees of a colony may remain quite tame for many months, and one day sally forth and sting to death every living creature near their abode. Every year my fowls are stung to death by my bees, generally when I am not at home, through boys throwing stones at the hives, or by some other provocation less naughtily meant.

On account of this viciousness of the native bee, the importation of the Italian bee would be a great boon to us if, in other respects, it is as good as our bee in our climate. In winter in the Transvaal the nights are cold and the days warm with sunshine. To the Italian bee this difference in temperature seems to be perplexing; for on my return home this winter, after an absence of three months, I found the Italians weak, with hardly any brood; but the brood-chamber was stocked with honey, though not so much that not enough room was left for the queen to lay eggs; whereas the native colonies, instinctively knowing that there will always come in some honey from the eucalyptus-trees during winter, and also feeling the necessity of making up for the wear and tear of life, which in winter is great in a mild climate, had used up much of their stores in order to raise brood. This I consider the redeeming quality of our native bee, as I would rather feed a colony or leave it much honey than run the risk of losing it through insufficient breeding.

Last season I had introduced seven Italian queens by my own safe method, i. e., by tacking wire gauze over a queen-excluder, putting this on a strong colony and over it a brood-chamber with the Italian queen on combs with hatching bees. From these queens I reared several more which I either introduced by the Simmins pasting (direct introduction) method or reserved in nuclei. In order to avoid confusion I had cut the right wings of the imported queens and the left wings of the untested ones.

On my return three weeks ago I united the weak colonies and gave them all Italian queens mated with common drones, retaining three pure imported queens to rear from next season, when I shall, by the law of parthenogenesis, have only pure drones fly-

ing from all my colonies, twelve in number. In the summer, in December, last year, when the honey-flow ceased I was disappointed in the Italian bees casting out all their drones so that I had to abandon all hope of rearing any purely mated queens, not having time to rear drones artificially. This year I hope to continue my experiments, and, if successful, I may afterward be able to judge which bee is the better, and whether the Italian is likely soon to acclimatize and acquire, through experience and inheritance, those qualities that are essential in our country. If she behaves in the same way in her native land as she has done here this first year, then she has, besides her gentle nature, only one quality better than our bee—namely, of putting on a tremendous spurt to bring in the last drop of an ebbing honey-flow.

Langstroth made mention, in his book, of this quality of the Italian bee of filling the brood-chamber with honey, but did not state whether or how this drawback was overcome. I should be very much pleased to learn from the editor, or somebody else, what those men experienced who first introduced the Italian bee into other countries, and how they succeeded in educating it up to the customs of the adopted country.

We have no foul brood in South Africa. As the disease is, according to most books, in the honey-sac, the starvation cure being the most effective remedy there seems to me no danger of importing queens in traveling-boxes, as I have received mine, in the accompaniment of about 25 bees, provided every thing but the queen is immediately destroyed on arrival. Or do you agree with those who advise us not to import foreign bees?

Likewise, I should be very glad to be informed whether the governments of other countries appoint bee-experts who go about lecturing on bees, giving demonstration lessons, and generally teaching people how to work with bees. Such encouragement from the government would certainly tend to promote bee-keeping; but has it any drawbacks?

Harmony, Pretoria, Transvaal, South Africa, July, 1909.

[It is probably true that Italians are more inclined to congest the brood-nest with honey than blacks. While for the production of comb honey this is a slight disadvantage, yet for the future prosperity of the colony it is an advantage. If, however, the modern methods of comb-honey production are followed there will be no great difficulty in getting Italians into the supers.

We do not believe that foul brood can be carried in the ordinary mailing-cage providing the precaution is taken to transfer the queen from the cage in which she is received to an entirely different cage for introducing. The only way of carrying infection would be through the honey used in making bee-candy. Reputable queen-breeders in this country, so far as we know, make it a practice to sterilize the honey which they use for making queen-cage candy. If the party at

the other end of the line who receives the queen transfers her to an entirely different cage we do not see how the disease could be transmitted. Of course, as a further precaution the mailing-cage should be burned.

England sends out bee-experts to lecture on bees in different sections of the country. Just how much of the territory they cover we do not know. Something of this kind is done in other European countries. So far the United States has done nothing of this sort except that its experts in the Bureau of Entomology, Washington, D. C., sometimes go out to attend bee conventions, where, of course, they are called on to read papers. Some States of the Union send out foul-brood inspectors who not only give directions on how to cure bee diseases but furnish valuable information on the general handling of bees.—Ed.]

QUEENS HATCHED ABOVE AN EXCLUDER.

A Good Plan for Keeping Surplus Queens.

BY A. J. BURNS.

Last fall I put some thirty or forty ripe queen-cells in as many upper stories, provided with an upper entrance with a division-board between made of very thin boards with a three-inch hole bored through on each side of the center about midway between the ends, and covered with excluder zinc. Of the whole lot I got only three queens fertile; the rest disappeared, or I found them dead on the division-board. A number of others disappeared similarly. I then began to watch for the cause. I saw nearly all the young queens just after emerging, so I know they had a fair start. One day I saw a young queen crossing one of these openings when a worker came up from below and seized her and almost instantly stung her. A few spasmodic quivers and she was dead. The queen below was less than a year old. In the light of Mr. Beuhne's experience, page 1062, Sept., 1908, perhaps if the queen below had been three years old or over it would have been different; but I do not often have queens as old as that. I then tacked a piece of wire screen on the under side of the opening, and nearly all were fertilized; however, by this time I did not have many queen-cells left, and it was too late to start more.

I found these queens to come in most opportunely later. Half a dozen or more colonies became queenless through various causes. I took one of these stories, bees and all, where there were two queens and changed places with one of the stories of the queenless colony, taking the story with the most or least honey, or most or fewest bees, as seemed advisable under the circumstances; placed a sheet of paper between the strange bees so they would mingle gradually, and all went well.

San Diego, Cal., Nov. 30.

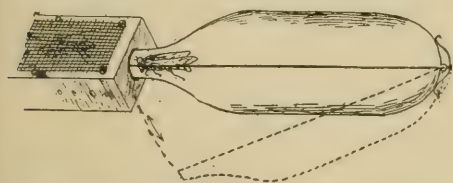
HEADS OF GRAIN FROM DIFFERENT FIELDS

HONEY COULD NOT BE FILTERED THROUGH CHARCOAL.

On page 674 Mr. H. D. Tennent suggests that bone charcoal might lighten honey-dew and improve its flavor. In order to benefit by the bone-charcoal treatment the honey would have to soak right into the pores of the boneblack and percolate intimately through it. I do not see how such a heavy syrup as table honey could possibly do this. I never worked as chemist in a sugar-house using boneblack (beet-works use sulphur fumes instead); but I see in some text-books that the filtering is done on intermediate syrups, say 80 or at most about 50 per cent solid matter. Honey at about 80 per cent would have to be diluted by more than its volume of water, and filtered hot. I am afraid it would not be possible to bring it back to 80 again without boiling, and then the product might get darker in color than it was in the first place. Also, if boiled, the honey would show a reaction for furfural, and this might bring it in collision with the pure-food laws.

A FASTER WAY OF CAGING BEES.

It seems to me that time might be saved in putting bees into queen-cages by using a little arrangement something like the one shown below. The bees could be allowed to crawl in from one or two while the oper-



ator would be brushing some more into another from the proper nucleus. If a beginner had just one he would be happy in relieving his clumsy fingers from the strain.

BEN P. EDGERTON.

Hicksville, Ohio, Nov. 4.

[Your arrangement for catching a lot of bees, and running them into a cage, looks, on first thought, as if it might work very nicely. Your idea seems to be to put the bees into a dark inclosure, assuming that they will go toward the light and into the cage; but in actual practice we doubt very much whether they will do this. Of course some of them would go into the cage, but others would remain in the wooden bottle, so to speak. While we never tried it, we doubt very much whether for average work a queen-breeder could put up as many queens with this arrangement as he could in the old-fashioned way, picking up the queens one by one, and putting them into a cage as illustrated recently in these columns. The hand-pick method is sure of results.—ED.]

ITALIANS DYING FASTER THAN THE BLACKS.

I introduced Italian queens to some of my black bees last summer. I examined them late in the fall, and they had plenty of honey to carry them through. In fact, the Italians had more honey than the blacks. I keep my bees outdoors all winter, as we don't have very cold weather down here.

The coldest weather we have had this fall and winter was just cold enough to freeze water so ice would be about a quarter or half an inch in thickness; and every time these little cold spells come, which last from one to three days, I can find from half to a handful of dead bees among the Italians, and none at all among the blacks.

WHAT IS THE BEST PLAN TO KEEP DOWN INCREASE?

I have nearly as many bees as I want, and I wish to adopt some plan to keep them from swarming. The above two subjects are some I want to have your ideas on; and any thing you give me on the same will be appreciated.

TOBACCO-BLOSSOMS NOT INJURIOUS TO BEES.

Mr. J. A. McKinnon, page 787, Dec. 15, wants to know whether tobacco is harmful to bees. I live in the tobacco belt of North Carolina, in Granville Co. Tobacco is the principal money crop, and it is grown here on

a large scale. I have noticed, time and again, when tobacco-fields were in full bloom with thousands of blossoms, and I have never yet seen a bee gathering nectar from them. For this reason I don't think it was tobacco-blossoms that affected Mr. McKinnon's bees.

Tar River, N. C., Dec. 27.

J. Y. CREWS.

[Years ago some statement was made to the effect that blacks were harder than Italians. In 1879 we had something like 20 colonies of them among our Italians. We kept them to test them in comparison with yellow bees. They were inferior as honey-gatherers, mean as robbers, and no better for wintering, or at least that winter, as it was an ordinary one. There has been a sort of impression that black races of all kinds are more hardy than any of the yellow races. This is possibly true, as their native habitats are in colder climates, but not colder than the home of leather-colored Italians on the Alps of northern Italy and Switzerland. Any yellow bees bred for yellow color, according to our experience (and we tested a good many strains of them), will not winter as well as the leather-colored strains of Italians. It is possible that you may have had some of this too much inbred weakened yellow blood.

The best plan to keep down increase is too large a question to discuss fully here, and we would, therefore, refer you to the text-books, particularly our A B C and X Y Z of Bee Culture, under head of Swarming. If we were running for extracted, and desired no swarming, we would use ten-frame three and four story hives, without queen-excluding honey-boards. If we were producing comb honey we would use any standard hive, clipping the queen's wings, and hive the swarm as it comes out on the old stand in another hive containing foundation starters. The parent hive we would place at one side, and at the close of the season we would put it on top of the hive of the swarm, of course taking away one of the queens.

With regard to the question of whether the nectar from tobacco-blossoms is injurious to bees, your experience would prove nothing; as you say the bees in your locality do not work on the blossoms. What we wish to know is the effect of tobacco-nectar on bees when they do work on the plant.—ED.]

WHAT SHOULD A SECTION OF HONEY WEIGH?

On p. 591, Oct. 1, is an item on "scales for weighing sections," stating that all sections not weighing $13\frac{1}{2}$ oz. should be put down as seconds. Now, will a $13\frac{1}{2}$ -oz. section, or even $14\frac{1}{2}$, go for a No. 1 section? There are 16 ounces in a pound, in New York; then the section itself weighs about an ounce when dry; and if a customer is to get 1 lb. of honey it should weigh 17 oz., or else honey goes for 12 oz. to the pound. Please enlighten me, as I am a beginner. Most of my sections weighed 15 oz. when full.

ARE THE GOLDENS HARDY?

Are the golden Italian bees as rugged and as good workers as the three-banded? They are very pretty; and if as good every way I should think there would be a good demand for them.

Johnsonville, N. Y., Dec. 20.

A. D. CASE.

[There is no advantage in having a section weigh more than a pound. Most dealers prefer to have a scant pound; and some even prefer to have them weigh no more than ten or twelve ounces. A full pound of honey at the present time runs anywhere from 18 to 25 cts. at retail. The average householder wants something he can get for about 15 cents.

Our experience with golden Italians (and we tested a good many strains of them winter after winter) is that they are not hardy in comparison with ordinary strains of Italians that have not been weakened by breeding. Our different apiarists who have worked for us have, time and time again, remarked that extra-yellow bees that we keep to show to visitors are the first to die in winter if there is any mortality. While the ordinary strains would come through in fairly good condition the yellow bees would either die outright or be very much weakened before spring.—ED.]

WHAT APPEARS TO BE POSITIVE PROOF OF THE VALUE OF BEE-POISON FOR RHEUMATISM.

Dr. Bonney says, page 784, Dec. 15, he had rheumatism after becoming immune to bee-poison. That is one side of the story. Let me give you the other one. I used to have rheumatism so bad that several times I was for a week at a time on my back unable to get up on my feet without suffering extreme pain. Since I began keeping bees I have been entirely rid of that ailment with the exception noted below, and I believe that my cure was due to the bee-poison; but the doc-

tor would not accept this as proof. He said it just happened so, or that the rheumatism was just ready to leave me. But I have a stronger proof in support of my belief. I broke my arm over thirty years ago, and once in a while I have had severe rheumatic pains in my wrist. Whenever that has happened (more than twenty times) I have gone to a hive, caught a bee, and made it sting me on the affected part, and in less than a minute the pain was gone. That remedy never failed me.

Lake Mills, Wis., Dec. 21.

GUSTAVE GROSS.

[The last incident seems to furnish quite positive proof of the value of the poison.—ED.]

MOLD ON HIVES IN A CELLAR.

We put 150 colonies in the cellar with ice, snow, and frost upon the hives. Some of the hives have white mold on the fronts. The bees have been in ten days, and the thermometer stands at 42 F. It was 30 the first day. The hives appear to be damp. I expect to put some lime in the cellar to slack and take up the moisture. What would you advise? IKE BARBER.

Smithland, Iowa, Dec. 11.

[If your cellar is too damp, and especially if the temperature is down to 42, we would advise you to use a small drum stove and burn chestnut hard coal. A light fire for a few hours would dry out the cellar and raise the temperature to about 45. It should not ordinarily go much higher than that. If it should run up to about 45 without the stove, dampness on the outside of the hives would do no particular harm. If the temperature was 42 at the time you wrote, it would be our opinion that it might run much lower than this before the winter is over. If so, you might have some severe losses with considerable dysentery; for of all poor places to winter bees in, it is a damp cellar with a temperature running down to 40 or below.—ED.]

LIME TO PREVENT "WEEPING" OF HONEY.

I do not think it wise, usually, for amateurs to try to rush into print; but after reading Mr. Hart's "tale of woe," page 738, I am tempted to say that I am storing comb honey in a basement. It is dry, but there has been a little tendency to "weep," and I am trying the experiment of putting a few pounds of fresh lime under each pile of supers. I place a bottom-board on the floor of the basement, an empty super on that, some lime in that, then tier supers of honey right from the hives twelve or so high above the lime. So far as I can judge, the scheme seems to have some merit; and if it is new, perhaps some who are troubled with weeping honey would like to try the experiment also.

Billings, Mont., Dec. 10.

C. M. CHAFEE.

[If possible some other place rather than a basement should be selected for storing comb honey, for the air, though apparently dry, is seldom dry enough. The letter below from Mr. Wilcox covers this matter pretty well.—ED.]

THAT "WEEPING" HONEY.

A few years ago, when I was producing comb honey largely I had some experience with the same trouble, page 738. If honey was stored in a room much cooler than the outdoor air, or one wholly or partly below ground, or if the room was very close, with little or no ventilation, that sweating or "weeping" appearance was almost certain. I have seen it in the supers on the hive where the colony was very much reduced in strength after the sections were finished and a spell of warm foggy weather followed. I always prevented it where I stored it in a well-ventilated chamber under the roof with a fire in the room below.

There is much difference in the thickness of cappings. That with thick cappings will not "weep" as soon as that with thin ones. I thought the cappings were made thicker by leaving the sections on the hive after they were finished; but of that I am not so certain. I think comb honey can be made thicker by good storage after it is off the hive, and I know it can be made very much thinner by bad storage.

Mauston, Wis., Dec. 15.

F. WILCOX.

WHITE RATS DRIVE OUT GRAY ONES.

In your Dec. 15th issue is an article on how to get rid of rats. I was troubled with them, and secured a pair of white rats and let them run on the premises. I fed them at the shed where I kept my bee-supplies. They are not destructive, as I have left combs filled and foundation exposed, and they did not touch them. They drove out all the rats and mice on the place.

Lebanon, Pa., Dec. 26.

W. H. JONES.

WIRE CLOTH IMBEDDED IN FOUNDATION.

Having read the arguments pro and con in regard to fastening combs in frames by wiring or with splints, the idea suggested itself to me why wire cloth could not be used with a soft thin wire, and a mesh of about the size of a worker-cell, and milled right into the foundation at the factory. The size of wire and mesh best adapted could soon be determined by a little experimenting. It would be cheap and effective. It would not be necessary to have it the full width of the foundation sheet. One-third or half the width would certainly be enough. I think it would not cost much to try it. I never saw this idea mentioned before, so there is no patent on it.

Fredericktown, Mo., Dec. 13.

J. BACHLER.

[Wire cloth such as you describe would be too expensive. Then, too, it would be practically impossible to run it through a mill as you suggest.—ED.]

HOW TO AVOID AFTER-SWARMS.

How would you treat a colony with a clipped queen that has swarmed and lost its queen, and the queen-cells hatching? I want to save absconding. The bees seem to have such a desire to swarm that most will leave if they are not divided quite small.

Canton, S. D.

L. A. SYVERUD.

[After the prime swarm has come off from the colony there will be a number of virgin queens, and each one of these will be likely to lead off an after-swarm until there is nothing left of the old parent colony. After the first swarm has been cast, all cells should be destroyed but one. If the virgins are hatched they should all be removed but one. While this plan will not necessarily stop after-swarming in every case, it will go a long way toward it. For a further discussion of this subject see "Swarming" in our A B C and X Y Z of Bee Culture.—ED.]

UPWARD VENTILATION VS. SEALED COVERS.

Sealed covers should always be made from half-inch white pine. They should not be disturbed too late, for the bees should have them sealed before cold weather sets in. If bees are packed in chaff hives, as they should be, with a $\frac{3}{8}$ x 8 entrance kept free from snow and ice, this entrance will take care of all ventilation required to carry moisture from the colony. Wild bees do not have absorbing cushions. Who ever heard of an absorbing cushion in a bee-tree? The moisture is taken care of by the entrance to the cavity. Bees will propolize all cushions where they can get at them; and since this is true, why do we put such material there? I have always used sealed covers—the tighter the better. I have not lost a colony of bees in wintering with sealed covers in 25 years.

Ashtabula, O., Nov. 6.

THOMAS CLARK.

WINTERING ON SUMMER STANDS.

My hives are eight and twelve frame, also twelve-frame sectional. The latter I like better for many reasons. All except the eight-frame are made of $1\frac{1}{2}$ red cedar, with flat covers of the same cleated on the ends. These are fitted snugly over the frames without packing of any kind. When the wet season arrives, the hive is blocked up in the rear as high as it will go without sliding off the stand. This allows condensed moisture to run down and out at the entrance without any falling among the bees. At the same time it makes a deep hive out of a shallow one, which is no small advantage. Do not hesitate to try it.

Sonora, Cal., Nov. 11.

A. V. HEROLD.

COLORADO GRADING-RULES ALL RIGHT.

Friend Trickey, of Reno, Nevada, says, p. 723, Dec. 1, "We must depend very largely upon the honesty of the producer. If he does not grade honestly and fairly, cut him out." Our Colorado rules do this to a T, and no one person or committee is called upon to do the cutting. Our rules saved us this year of light weight.

Platteville, Col., Dec. 13.

R. H. RHODES.

SIZE OF BEE-SPACES BETWEEN SUPERS.

When one runs for comb honey, and has two or more supers on one hive, what would be the right bee-space between each two supers— $\frac{1}{4}$ or $\frac{1}{2}$ inch?

Bellaire, Mich., March 8.

A. SCHOOLCRAFT.

[One-half inch would cause trouble. One-fourth inch is about right.—ED.]

POULTRY DEPARTMENT

By A. I. Root.

CHICKENS IN FLORIDA; THE "SIMPLICITY" INCUBATOR, ETC.

We left our Medina home on the evening of Nov. 15, and on the evening of the 17th were in our Florida "cottage in the woods," installed for the night. A week or two ago I asked my neighbor, Mr. Stanton, who had my fowls during the summer, to save up for me from my strain of Leghorns 12 or 14 dozen eggs for starting my incubator on arrival; and, accordingly, on the 19th I gave my new incubator 120 eggs, this being the first time I had ever made a trial of it with *all* the shelves filled. Mr. S. had 13 dozen eggs saved up for me; but he gave them to me with the following caution: There were only two males in my flock of 60 hens—my old \$5.00 one, and a cockerel; and, worst of all, he discovered, the day before my arrival, that the \$5.00 bird *could not be found*. He had missed several grown-up fowls before; and the only explanation for it was that a wildcat had jumped the four-foot netting fence, or that some one had *stolen* him.

Now, I always dislike to hear talk about "stealing" unless there is a very good reason for suspicion; and I have before remarked that my neighbor, Mr. Rood, has for years kept all his fowls roosting in an open shed, almost close up to the highway. Their perches are only about a yard high, and one could pick up a chicken any dark night, without even opening a door or gate to the hen-roost. Why, even the colored people in this region don't "steal chickens." I wonder if I shall offend (by "stepping on their toes") any of my good friends if I say right here that my good neighbor Ten Broeck (just over the poultry-fence) said yesterday, "Mr. Root, this street we live on is about a mile long, and fairly well settled; but there isn't a man or boy on the whole street who uses tobacco in any form or shape."

Now, isn't it a fair deduction that my rooster certainly wasn't stolen—at least not by any one in this neighborhood? No one knew exactly when he disappeared, but Mr. S. couldn't find him in the flock the day before I came. I decided to put the eggs in my incubators, however, for I wanted to make some experiments on fertility any way. You see I am working somewhat like our experiment stations. A farmer visited one of the branch stations near my Ohio home, and complained that the crops were not *nearly* as good as *he* could raise. The manager replied, "Of course not. The field or plot you are looking at has been planted to the same thing for *five years*, with no manure or fertilizing, to see the effect. Now look at this other plot on the same kind of ground."

Well, thanks to my new egg-tester, on the *third* day I had noticed that very few eggs

showed any fertility at all; and on the fifth day I found only *two dozen* out of the whole 156 eggs that had made a start. Now, lest some one might say it was partly my new incubator I put part of the eggs in my 70-egg Cypher. The result was just about the same. I suppose you all know that eggs tested out on the third or even fifth day are, to almost all intents and purposes, *fresh eggs*; but, of course, no one would sell them without explanation. Well, we had "eggs galore" three times a day for about a month. As Mrs. Root has some of her own notions about "incubator eggs," the heavy responsibility fell mostly on myself, and I have just been wondering if the "egg diet" may not explain, at least to some extent, why I have been so well and so happy (with my "chickens") for the past month.

On Thanksgiving day I started both incubators anew, giving the Cyphers 70 eggs just laid, and my own the 24, and enough more to make 120. With the Cyphers I followed directions to a dot, and got about a 70-per cent hatch on the 20th day. In fact, the chicks all came out in just a few hours. My own gave a very poor hatch, and some of them were not out until the 23d day. Please bear in mind, however, it had the 24 out of the lot of infertiles; and I have reason to believe that, when so many are infertile, the few fertile eggs are not likely to be of strong fertility.

Another thing in this connection: Where fowls are moved to new premises the eggs laid before they get to feel at home are not likely to be strongly fertile.

When I saw how things were going I procured in the neighborhood five good males for my 80 hens and pullets; but it was about ten days before I had a good per cent of strong fertility.

Again, on filling *all* the shelves of my incubator I found the lower shelf much colder than those above it. This I have now obviated by placing a disk of tin about four inches in diameter just above the flame of the lamp, preventing the heat from going so much up the chimney and making it first warm up the bottom of the water-boiler. (This takes more oil than I mentioned formerly.) Also, those openwork shelves gave too much ventilation and too strong a draft of air up through. I have remedied this by winding wide cotton tape so as to cover the spaces between the wooden slats. This gives a warmer atmosphere in each apartment, so that a lower temperature of the boiler keeps the eggs up to 103. The space under the boiler, around the lamp, I have also closed in with a sort of thick warm curtain to retain the heat better.

With the improved incubator oil I have spoken of, one can get along very well without a thermostat; but do not undertake to regulate the temperature by turning the flame of the lamp up or down. Do the regulating by the damper in the chimney. With this good oil you can get a very steady even flame for three or four days, or perhaps a week. The five-gallon sample of oil I got in Medina is rather better than the barrel I have

since purchased in Jacksonville, Fla. Get the blaze about where you have found it should be, and then make changes by opening and closing the damper at the top of the chimney.

Now, it may not transpire that my incubator is, at least as yet, a "great discovery," but I have just got out something else that is. If you recall what I have written about fireless brooders you will remember that they cost (at least if you try to buy one) a good deal of money, and none of them are strictly fireless after all. I think I have cured at one stroke most of the two troubles mentioned above.

A. I. ROOT'S FIRELESS BROODER.

Get a cheap splint market basket, such as sell from five to ten cents. Get a thin board, 10 in. long and 3 or 4 wide, and tack it under one end of the basket for a doorstep. Just over the middle of this board cut a door for the chicks to go out and in. Now make two oblong hoops of stiff wire—one to drop inside and lie on the bottom of the basket, and the other enough larger so it will squeeze in near the top of the basket, and stay where you place it. Cover both hoops with burlap, and your brooder is ready for the chicks. The smaller hoop is mainly to keep the floor of the brooder clean. If you use galvanized wire you can wash and dry it quickly. By making bags of burlap, that the hoops will just slide into, you have a double thickness. For cold or cool weather the sides of the basket may be protected with flannel. Get $\frac{3}{4}$ yard and fold it double so it will reach from the top rim of the basket down to the bottom, and a little more. Tack the upper edge to the top rim of the basket inside. I first put 28 chicks in such a basket, and they are doing splendidly. At first I put a folded cloth over the burlap covering at night; but they soon gave me to understand they were too warm, and needed more air. When just the thin open-work burlap was over them they were all right. Now, the low cost of this brooder is by no means its greatest advantage. You can pick it up with one finger and carry it indoors, when night comes, where it will also be safe from prowling enemies. After my brood of 28 did so well in the basket I tested a larger number, and last night had 62 chicks in just a common oblong ten-cent basket. Although the temperature was down to 42 in the woodshed, where I placed them, they got so warm I raised the bottom up on two bricks so as to let some cool air underneath. They came out in the morning, brisk and bright as crickets.

There is just one condition where a little artificial heat is needed, and I think this is true with all fireless brooders. When the strong healthy chicks are all outside on a cool day there is, of course, no heat of any kind in the brooder. If there are any weak or younger ones in the brood, a hot brick or a lamp brooder of some kind is almost a necessity. In my first experiment with 28 from the Cyphers incubator (and, of course, all hatched at once), I did not need any hot

bricks at all; but some from my machine, that came stringing along, would have perished without a hot brick in the basket afterward. When they all got into the basket at night, of course no brick was needed. Well, just now I feel like saying I want all eggs to go in the same day, and have all chicks come out the same day as far as possible; even if my machine will enable one (who wants to) to give his machine the eggs the day they are laid, and then have chicks hatching every day in the week. It can be done, but it doesn't pay unless you do it only for the fun of the thing. Have each flock of equal age and of equal strength as far as you can, and then what is suitable for one is suitable for all.

What about our "basket brooder" when it rains? Well, ours stand under a strip of enameled cloth tacked to the side of the house. One Sunday, when we were at church, a summer shower came up; and as the chicks were only about four days old they hardly knew enough to "go in when it rains," and when I found them they looked much like "drowned rats," as the expression goes, and were peeping piteously. I thought they would have to have artificial heat sure; but Mrs Root said if I put the whole 28 in their basket, as the weather was warm, she felt sure their collective animal heat would dry them out all right. I did so, and watched them anxiously for an hour. They seemed comfortable, but were at that time by no means dry. In about two hours they were cutting about in the sunshine outside about as fluffy and handsome as ever.

Of course the basket will answer only when they are small; and with fifty or more an extra basket will be needed so as to "divide the swarm," say when they are a month old or sooner. And, by the way, what is the objection to an empty barrel laid on its side? Two years ago I had seventy in a barrel, and they stayed there until they were old enough to fly up into the pine-trees. Unless the barrel is pretty good, a piece of oilcloth should be tacked on the upper side to keep the contents dry.

As nearly as I can make out, a bee-keeper, Mr. V. W. Clough, now of Aurora, Ills., first brought out a fireless brooder. Philo may be also an original inventor of it, and perhaps they both made their experiments public about the same time. I have just received one from Clough. It has a capacity of from half a dozen chicks to 200, and may be enlarged in size and also in height so as to keep half a dozen pullets until they are old enough to lay inside and hatch chickens. It is really a small Philo house, and can be used as such in his system. The price is \$5.00.

KEEPING CHICKENS IN FLORIDA; EXPENSE, ETC.

At present the grain for my 85 full-grown fowls costs about 20 cts. a day; and as we are getting 40 cts. a dozen for the eggs, six eggs pay the feed-bill. At present my 80 hens are giving about two dozen eggs per day. One friend in the North says I had

better stay all summer in Florida and try to make hens lay the year round before I extol this State much further. Well, my fowls have been here several summers, even if I have not; and my neighbor Stanton gave you a report or two in regard to eggs in summer. My neighbor Rood also keeps 50 or 75 the year round, and gets some eggs all the time. When I get time to "trap-nest" out my drones I will try to show you a better egg-yield than I am reporting now.

WHY DOES A SITTING HEN "SHAKE UP" HER EGGS WHEN SHE RETURNS TO HER NEST?

I should like to tell A. I. R. I was sorry he did not go on and say what that pullet he watched threw those straws for. I think it was to start all the little hearts to beating. Once when I had a cousin here on a visit she saw a young hen come off her nest, so we got the rake and hauled the eggs out from under the porch. She said, "I think they are good," and they did look like it; but I knew they could not be, so I asked her if she ever saw the inside of an egg when the heart just commenced to beat; and as she had not I said, "Your hands are warm, let me pour the contents of one out in them;" but, to my surprise, the chick was formed clear to the feet and wings. We watched the heart beat some 20 minutes, then we put the egg in the cat's dish, and in about half an hour she went back and it still beat. About ten minutes later she went again, and it had stopped; but a little shake started it, and it beat several minutes more. Now, had it been in the shell, and warmed, it would have kept on. My own theory is, that an old hen always settles herself on the nest so as to give the eggs that little shake. I have worked with incubators and sitting hens a long time to find out that one little point why the hen gets on her nest just so, especially when she comes in a hurry, and her eggs are cool. I read with interest your chicken talks as well as those for home and health.

What Cheer, Iowa.

R. KING.

In testing eggs with my new tester I have several times noticed the movement inside was very sluggish, or perhaps none at all, when the eggs had just been cooled. Warming them up seems to restore life; and it may be a little shake, as our brother suggests, wakens up the suspended animation. I once saw a doctor's patient, under the influence of chloroform, stop breathing. The old doctor gave him a little shake, and said, "Come! wake up and go on breathing." The patient, after a little pause, fetched a long breath, and was soon out of danger. Eggs at a certain stage can be kept three or four days—possibly a week, and be, of course, perfectly cold, and still revive and produce good chickens, if given to a hen to warm up, and, perhaps, also give them that "maternal shake" our friend calls our attention to.

GOOD FOR THE WYANDOTTES.

I have 13 pullets, hatched about April 1, White Wyandottes. The first one commenced to lay Oct. 1. By the 20th they were all laying. I did not keep a record of how many they laid in October; but in November they laid 289 eggs, or more than 22 each. Up to last night, Dec. 18, they laid 179 eggs, and are still at it.

Dalton, Pa., Dec. 17.

T. H. MILLER.

BURBANK, FLORIDA, THORNLESS CACTUS, ETC.

In the *Toronto Globe* for Nov. 6 there is an advertisement occupying a double page of a great newspaper, with pictures of Burbank's thornless cactus, and it really "takes the

cake" for extravagant advertising. We give you the opening sentences, which we find right under the immense picture of the spineless cactus.

WHAT THIS ANNOUNCEMENT MEANS TO YOU.

It means financial independence for the rest of your natural life.

It means that you secure a farm in Florida on which you can produce the Burbank and other products and ship them to the markets of the world, realizing the very highest prices.

It means that earnest men and women of the North, East, and West may free themselves from the shackles of wage-earning—or dispose of their non-productive acres—and in the glorious climate of Florida live a life of ease and comfort.

It means health—long life—freedom from worry—living under the turquoise skies of Florida engaged in the noblest of all callings, that of the producer who makes it possible for the rest of the world to exist.

It means that, in the years to come, when this great organization has fulfilled its allotted destiny, you will realize that you have not only made a tremendously profitable investment but that you have been instrumental in promoting the desires and ambitions of the world's greatest plant genius—Luther Burbank.

In the section of Florida wherein are located the Burbank-Ocala farms the soil is actually so rich that it could be used, if necessary, to fertilize other sections of the State.

Of course, we do not know how much Burbank had to do with it; but we do find a letter from him, in another place, as follows:

LUTHER BURBANK SAYS FLORIDA SOIL IS VERY RICH.

Santa Rosa, Cal., July 15, 1909.

Mr. H. C. Bailey, President

New South Farm & Home Co., Chicago.

Dear Sir:—The samples of soil from Florida, which you have submitted for my inspection, are of very superior quality, so far as I can judge from samples. Of course, I do not know how truly the samples represent the general character of this soil; but if it is all like this, I would gladly pay one thousand dollars per acre for soil like it, for my own experiment grounds here. Just the right proportion of black leaf mold and fine sharp sand for the most perfect crops, especially of potatoes, melons, peas, beans, celery, and other garden crops; also for berries or farm crops. My new smooth rapid-growing cactus should do wonderfully well in such soil.

Yours very truly, LUTHER BURBANK.

You can find all over the State of Florida deserted plantations where somebody "blew in" his money, and afterward felt so disgusted with the outcome (or income, rather) that he left every thing to go to waste and ruin. Once more let me say, before you invest a copper in Florida real estate, go down and take a look and see what you are buying before you hand over the money.

THE "OCALA BURBANK TRACT" OF FLORIDA LAND, ETC.

Below is a sample of the letters I am getting from almost all over the North:

I am sending you a post card. I am thinking of investing in ten acres of this "Ocala Burbank Tract." Will you please write a few words on the enclosed card and tell me what you know about this tract of land. If you think this land is as good as where you are I will send the company \$10.00 to secure ten acres of it. If you think this is good land for celery, lettuce, etc., as it is where you are, I will come down there next month and take a look at it.

Merino, Colo., Nov. 28.

T. J. LANDRUM.

My impression is that Burbank has nothing to do with this speculation, and perhaps he has never given these people the right to use his name and his letters as they are using them. This is true, however: He has, at

least so far as I know, made no protest against it. Let me say to friend Landrum and others, there are at least two great obstacles in the way of the Ocala tract being as good as Manatee Co. for celery, lettuce, etc. Frosts are very much worse in the north and there are no artesian wells in that region.

A "KNOCK" IS A "HOLD-UP."

Last spring one of our readers became interested in the St. John's Development Company, which operated in Florida lands. After an investigation we became convinced that the land was such that it would not make a good investment. We wrote our friend to this effect, and he seems to have turned the letter over to the operating company. It was effective at least. The following is an extract from the letter he received in reply:

We are in receipt of your favor with the letter from the *Rural New-Yorker* attached, and we note what they say in regard to our lands in Florida. We did guarantee to return money to customers who were not satisfied after making an investigation; but we believe that, in fairness to all, an investigation would be a little fairer than writing to a personal friend in New York State, who has not seen the land, probably has never been in Florida, and who runs a cheap magazine that is practically unknown. If we had been using the columns of this magazine, they, no doubt, would have said glowing things about our property, and we consider this "knock" nothing more than a hold-up. We shall be only too glad to refund money to any one who is willing to take the word of any one so little known, and who has no right to speak authoritatively on this subject.

It is too bad about this "cheap magazine" which is "so little known." The writer owns a piece of land in Florida directly across the lake from "St. John's Park." All along the shore are deserted houses and ruins of orange-groves. In former years these houses were occupied; but death lurked in the damp climate, and northern people could not live there. We have reports from people who have known the land in question for years. They had chances to buy it, but would not touch it.—*Rural New-Yorker*, Dec. 11.

THE WONDERBERRY UP TO DATE.

We clip the following from the *Rural New-Yorker* of Dec. 11:

What has been the result of your campaign against the wonderberry?
J. S. A.

We can answer that better when Mr. John Lewis Childs issues his next catalog. Some of the other catalogs will also help answer the question. We understand that Mr. Childs has a very large stock of wonderberry seed on hand. It was also reported at one time that he intended spending \$20,000 in advertising it. We have proved beyond any question that the seeds which Mr. Childs sold developed into plants of the black nightshade. Luther Burbank offered \$10,000 if we or any one else could prove that the wonderberry was a black nightshade, and we have offered him proof from hundreds of sources. Among others who testify are the experts of the United States Department of Agriculture; dozens of botanists at the State experiment stations; Dr. C. H. Peck, New York State Botanist; Dr. L. H. Pammel, of Iowa; the botanists of the Kew Gardens, London, England; the Harvard Botanical Garden; the Royal Horticultural Society of England, and the Royal Horticultural Society of France. In addition to this, plants identical in character with the wonderberry have been found growing in Mexico and Texas, where they have been known for years. All this has been put up to Mr. Burbank, and he can have more if he wants. Thus far not a dollar of that \$10,000 has been separated, and not a word of apology to the American people for letting loose his "wonderberry" as a new "creation." The effect of this childish folly upon Mr. Burbank and his later "creations" remains to be seen.

"BELIEVEST THOU THIS?"

Mr. A. I. Root.—I am sending you two clippings from the *Farm News*, which I thought might interest you. By the way, the *News* is published in Dallas, Texas. Your Home papers become more and more interesting, and you ask me, "Believest thou this?" Yes, I believe; and your earnest words have strengthened this belief. If I thought you were not too busy I could write much to you. Suffice it to say, that in this home your papers are eagerly read, and are working miracles; and every one refers to you as "Father Root."

MADELEIENE E. PRUITT.

Ranch Vigo, Vancourt, Texas, Sept. 3.

TEMPERANCE.

"NO DRUNKARDS NOR CIGARETTE FIENDS ON THE PAYROLL."

We copy the following from the front page of the *American Issue* for November:

FROM THE GOVERNOR OF KANSAS.

It is a common thing in Kansas, in a majority of counties, not to have a prisoner in jail, and most of those fellows gathered in jails are there because of intoxicating liquors. There is a close relation between drunkenness and jails and penitentiaries. It means a great saving to the people of this State and nation in an economic way. I expect, while I am governor of Kansas, to stand for the best things in public and private life. We won't have any drunkards on the State payroll while I am governor, and we won't have any cigarette fiends on our payroll either. I am going to have this State government stand up for every thing that is good and noble, and for high ideals, and boost Kansas just as high as we can.

GOVERNOR STUBBS, of Kansas.

May God be praised for a governor who can honestly utter such sentiments. Now have we any more governors who have the willingness and courage to stand by the side of Gov. Stubbs?

SALOONS LOSING GRIP BEFORE DRY CRUSADE.

"Eleven thousand saloons voted out of existence, and 4000 more forced to close in 1908."

This is the record of the things accomplished by the Anti-saloon League of America, according to Dr. P. A. Baker, general superintendent of the league, in his biennial address before the semi-annual convention in session at Orchestra Hall last night.

"Since January 1, 1909," he said, "saloons have been closed at the rate of forty a day; but that 70 per cent of the area of the United States forbids licensed liquor traffic tells only a part of the visible results. No power of evil on earth can long withstand this continued onslaught. The gates of hell can not prevail against it."

"There is no class that suffers so much from the drink traffic as do those who perform manual labor, and there is no class so much exploited by the saloon and brewery element as they. The great labor movement is yet to become a great spiritual and religious movement. Organized labor is fundamentally a holy crusade. It often blunders, but it is a struggle toward light and justice and a square deal. It is striving for a principle of righteousness, but all the while, as a body, refusing to give due recognition to the source of all righteousness. Soon they will turn to the carpenter's Son and his church for assistance."

"We must not for a moment forget that this liquor problem is the church's problem, that the church must solve it. It can not turn it over to the Woman's Christian Temperance Union. It can not turn it over to any political party. It is not the province of a political party to inaugurate moral issues."

Dr. Baker also paid a tribute to the work of the W. C. T. U. in doing educational work in the schools, as did other speakers during the day.

Speaker Cannon came in for considerable severe censure at the morning and afternoon sessions at Handel Hall, and a concerted war against the congressional leader was promised. He was blamed for the defeat of efforts to secure anti-liquor legislation.

"We make no charges," said Legislative Superintendent William H. Anderson, in making his report, "but point to the unerring accuracy with which circumstances just simply 'happened' to prevent putting any real burden on the liquor interests in the recent tariff law."—*Chicago Record*.

The Department of Agriculture of the State of New York will hold bee-keepers' institutes at the following places and dates: Amsterdam, Feb. 8; Syracuse, Feb. 9; Watertown, Feb. 10; Rochester, Feb. 11. There will be three sessions daily. All of the New York State inspectors are expected to be present, and will be assisted by local talent. Every one interested in apiculture is invited to attend and take part in the discussions. A special invitation is extended to the ladies.

W. D. WRIGHT, Agent.

GLEANINGS IN BEE CULTURE

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EDITORIAL

By E. R. ROOT.

DID it ever occur to you that a breakfast food tastes better, when honey is used to sweeten it, when it is cold than when hot? Honey poured over any hot food will lose a part of its delicate flavor, consequently the editor has his breakfast food served at the same time with the rest of the family, but eats it last of all, making it a sort of dessert. By that time it has cooled; then he spreads upon it mountain sage or alfalfa honey with a liberal supply of good cream. None of the flavor of the honey is lost, and the breakfast food itself is just as good—yes, even better. Try it, dear reader, and see if you do not agree with us.

NEWSPAPERS and magazines all over the country are discussing the present high cost of living. What is the reason for the oftentimes excessive cost of food? Has honey increased in price proportionately? These and other questions relative to the topic will be dealt with in our next issue by two of our correspondents who are in a position to speak with authority.

The following letter from O. L. Hershiser is timely and to the point:

It seems to me there is something wrong somewhere when the price of living is getting out of sight and the prices of apiarian products remain stationary. I want to see better prices for honey if every thing else is to be high, so we bee-keepers may have a fair show in the fight for a livelihood. I am of the opinion that a lot of bee-keepers are to blame. Many others do not read bee journals or market quotations, and sell in ignorance of the value of their product. If honey were even a cent higher it would do a lot of good. It is impossible to make any thing putting up honey in tumblers when it is sold by jobbers here at 85 cts. per doz.

THE COVER DESIGN; BEE-KEEPERS OF ANCIENT GREECE.

WE do not know when the Greeks became bee-keepers; yet at a period of time when many other great nations were yet unborn we find these classic people engaged in honey production. They seem to have produced vast quantities of this delicious food, for the poets and historians are very profuse in their praises of the industry. This alone is proof that the bee-keeper was a factor worthy of attention. The fame of the honey of Mt. Hymettus reached from the Pillars of Hercules to Colchis.

The drawing shows a Greek bee-keeper of the "Macedonian Supremacy" period paying a forced tribute of honey to the tax collector. The hives shown are not of straw, as they appear to be, but are made of woven splints of wood, much after the fashion of the hickory corn-baskets of our fathers. The bees of Greece were quite likely of the yellow variety.

THE ALEXANDER METHOD OF CURING FOUL BROOD (BLACK BROOD).

MORE evidence is still coming in, showing that there is undoubtedly some merit, at least, in the Alexander cure. One letter, especially, comes from the author of the McEvoy treatment, and we are glad to place this before our readers:

Mr. E. R. Root:—Dr. C. C. Miller did well in curing his apiary of disease in an off year and in a very trying time. He has few equals as a practical bee-keeper. I am much pleased over his success, as it confirms almost all I have ever claimed. I felt like going over the doctor's article and writing a few lines which would be in his favor; but as others will, no doubt, take a hand, I will leave it to them.

We are having a fine winter so far—ground all covered with snow enough to save clover if it remains long enough. WM. McEVoy.

Woodburn, Ontario, Can.

Italics ours. As this letter came unsolicited, and from one of the best authorities on brood diseases in the world, it doubtless will have some weight. We are anxious to gather in all the testimony both for and against the Alexander treatment, and we hope to hear from others, including, of course, Mr. McEvoy.

THE CENSUS OF AGRICULTURE TO BE TAKEN THIS YEAR; THE UNRELIABILITY OF FORMER CENSUS FIGURES AS THEY RELATE TO BEE CULTURE; SOME DIFFICULTIES FOR 1909.

ACCORDING to the usual practice of a decennial census, the thirteenth census of the United States will be made this year. The agricultural census, which will form part of this general census, will be taken between April 15 and May 1, and the enumeration will be as of April 15. The reports on crops will be for the year 1909. The bee-keepers of the country will be interested in this census, for this is almost the only means which we have at present of learning the extent of the industry or what its growth has been.

We can supplement census data somewhat by general impressions and careful estimates; but, unfortunately, census figures in the past have not been very satisfactory. For example, the census of 1900 gave the total hon-

ey production for 1899 as 61,196,160 pounds—a figure so low that the annual comb-honey crop alone would probably exceed it. Unfortunately, only those apiaries on farms were included in the enumeration, and it is, of course, obvious that a very large percentage of apiaries, especially in the East, are not on farms but on smaller tracts of land in towns and cities. A farm in the census is defined as at least four acres, or enough to support the owner. It is to be hoped that bee-keeping will be included in the enumeration in towns and cities in the next census.

It is most unfortunate that the honey crop of 1909 has been a complete failure in so many localities. This will make the recorded figures of little value as representing the industry as it normally exists, or as indicating the value of the honey-bee as a producer. The enumeration of the number of colonies on April 15 will give the least number possible for the winter losses, which are heavy when we consider all classes of bee-keepers, will have been completed, and there will by that time have been no increase for 1910 except in the South. It will be obviously unfair to estimate the average production per colony by comparing the crop of 1909 with the spring count of 1910 except in a very general way.

Bee-keepers should make it a point to see to it that their bees are included when the enumerators visit them so that we can make as good a showing as possible. It may also be well for us in giving the crop for 1909 to designate honey-dew honey separately so as to attract the attention of the census authorities to the abnormalities of the year 1909.

SOME INTERESTING WINTER READING.

A YEAR ago we published a portion of a contribution on the natural history of the honey-bee, by Dr. H. von Buttel-Reepen. This was entitled, "Are Bees Reflex Machines?" but the very nature of the title was such as to cause our readers to believe that it was an abstruse scientific work beyond their comprehension. As a natural consequence, these papers did not at the time attract any considerable attention. Dr. von Buttel-Reepen, while a scientific man, is also a practical bee-keeper. He conducted a series of experiments that are not only exceedingly interesting but valuable from a practical standpoint. During the long winter evenings it is our opinion that many of our practical honey-producers will find this to be exceedingly profitable reading-matter. Here is a list of the titles and subheads:

THE HIVE ODOR AND ITS REACTIONS.

- Modification of Reactions toward the Hive Odor.
- The Swarming-out of a Queenless Colony.
- Intensifying the Reaction.
- Overcoming the Reactions toward Hive Odor.
- The Odor of the Queen.
- The Brood Odor.
- The Indifferent Odor of Young Bees.
- Failure of the Hive-odor Reactions in Queens and Drones.
- Abnormal Hive Odor.

THE MEANS OF COMMUNICATION IN BEES.

- Investigations with Colonies from which the Queens are Taken.

- Behavior of a Queenless Swarm.
- Disregard of a Queen in Open Air.
- Hearing Capacity and Sensations of Sound Present.
- Experiments on Swarms.
- The Infecting Influence of the Swarm-tone.
- The Enticing Note of Bees.
- The Teeting and Quahking of a Queen.
- The Queen's Tone of Fear.
- MEMORY OF PLACE IN BEES.
- The Paths of Bees and their Direction.
- Disappearance of the Memory for Location through Narcotization.
- The Box Experiment.
- The Loss of Memory for Location through Swarm Dizziness.
- Associations of Impressions.
- Memory for the Feeding-place in the Hive.
- Conduct of Bees in the Buckwheat Season.
- Are Bees Attracted by the Color of Flowers or by the Nectar?
- Place Perception in the Queen.
- Memory for Locality in Scouting Bees.
- The Eyes of Bees.
- The Flight of Orientation.
- The Finding of the Hive through the Senses of Sight and Smell.
- Bethe's Tree Experiment.
- Special Capacity for Orientation in Bees.
- The Influence of Weather Conditions on the Sense of Sight, therefore on the Ability to Orient.
- Influence of Color on Bees.
- FURTHER CONTRIBUTIONS TO THE NATURAL HISTORY.
- The Flight of Bees into a Room.
- The Behavior of Robbing Bees.
- The Origin of Hostile Conduct.
- The Vanishing of Instincts with the Decrease in the Strength of a Colony.
- Reactions toward Flight.
- The Formation of the Honey-comb.
- The Play Instinct in Bees.
- Bibliography.

The work was originally written in German, but was recently revised and afterward translated into English by one who has not only a knowledge of bees but of scientific terms. While this work really cost us more than any other of equal size, we are going to offer it to our readers on conditions that will place it within easy reach. It has 50 pages the size of this; and to any one of our subscribers who will send us \$1.00 before his subscription expires, or, if the subscription has expired, will pay up all back arrearages and \$1.00 for one year in advance, we will send a copy of this work postpaid. The general current of the discussion that will be running during the year 1910 in these pages will make this contribution exceedingly helpful.

ECHOES FROM THE LAST CONVENTION OF THE NATIONAL BEE-KEEPERS' ASSOCIATION AT SIOUX CITY.

THE last Annual Report of the National Association, giving a financial statement, complete list of the membership, and report of the proceedings, has been issued. Among other things discussed was the question of fastening foundation in brood-frames and the various methods of staying it by means of wire or splints. In this connection Mr. O. O. Poppleton drew attention to a method that he had been using with considerable success, that employed neither wire nor splints. Mr. Poppleton said:

Some six or eight years ago a gentleman in California sent me a permit to use his patent, and it is the finest I have ever used; but on account of its being patented I have never given it out very much. Mr. Hill, the late editor of the *American Bee-keeper*, in Florida,

and myself tried to retain the patent for the purpose of giving it to the bee-keeping world, but we could not succeed, and we dropped the thing. We use it ourselves. It beats wiring. I have not used wire for years. It is a very simple thing indeed. I have now in use something very similar to the old Given press. I had one in the apiary when I went to Cuba, and in using that I would make a double dip of the top of each sheet—that is, dip sideways instead of endwise, and by doing it that way and pressing it I got sheets that would not stretch, having the upper half very heavy and the lower half very thin. I tried to interest the Rooters, but they said there was some mechanical difficulty in running foundation by that method. Then I tried again a few years ago to interest them, but they were then working on another scheme, and did not take it up. This process is simply forcing the wax to any part of the section that you want it by brushing melted wax over the surface. It also adds wax to the edges of the cells, and in some way or other strengthens them. I think that also solves the question of feeding wax to the bees for them to use. I take my comb, and I have a little dish over a small kerosene-stove so as to keep the wax melted. I use an ordinary three-inch flat varnish-brush. I take up all the wax I can, and just rub it over the upper half until that wax will press out over the edges of the cells. It adds wax to the cells in the upper part, and I have no trouble. I use a quarter-inch-deep foundation. I have the finest combs I have ever had in my life. It solves the entire problem of stretching combs. The gentleman who has patented this process lives in Southern California, and his name is Henry Vogeler. It was patented in 1900. I would no more think of going back to wires or doing without it than I would of trying to keep bees that would not rob.

A patent was issued to Mr. Henry Vogeler, New Castle, Pa., April 17, 1900. The specific claim covering the process reads as follows:

"As an improved article of manufacture, the artificial comb foundation having its cells constructed with thick beads extending around and constituting their rims or edges, as and for the purpose specified."

Any person who desires to use this process should make arrangements with Mr. Vogeler.

RENDERING COMBS INTO WAX.

On this subject Mr. C. P. Dadant, who, as everybody knows, is an authority on the subject, had this to say:

Beeswax can be overheated with water by overboiling. The water, in boiling through the beeswax, will beat it into a grainy substance which looks like pulp. You can change your cakes into powder from one end to the other by overboiling—by allowing the water to beat your wax into a grainy mass. If you have seen something like corn meal at the bottom of your cakes it is beeswax; and the only way in which you can return that is by dry melting. There are several things about the rendering of combs that are of some importance to know. Do not melt your beeswax with water in pans that contain any iron. Iron will turn your wax black. There are several little points that should be considered. Do not use any acids in rendering wax. Most people, when they do use acid, use twenty times as much as they need. It takes the smell of the bees out of the beeswax. Our friend Mr. Kretschmer said, "Soak your combs a long time." That is right. Take the old cocoons and crush them as much as you can, so that they will not take in the beeswax. Those cocoons have the shape of a honey-cell, and they remain there after they are crushed, and there is no chance for the beeswax to get into them. Put your combs in clean water and melt them. It is not necessary to use a press until you have taken the best of your wax out. We never do use a press with cappings, but we use a press for the residue. A gentleman asked me a question. The boiling must be with water; and if you spoil the beeswax and get it grainy, that part which is grainy, and which is more or less dirty, and which contains a good deal of water, must be returned to good shape by dry heat. Then you will not have as good beeswax as you would otherwise have. I have had shipments of beeswax that were so badly beaten with water that they would lose one-fifth. It would not look very much like beeswax. It would look like a cake made of ground corn. I had a long discussion in regard to pollen in beeswax. I did not know at first that there was any such thing; but I found it out when we were making foundation.

We were throwing away our residue containing that grainy substance. In the course of time it melted in the sun, and after a while we took up this residue and got 100 lbs. of beeswax from it.

USING HONEY AGAIN FROM FOUL-BROODY HIVES, EVEN AFTER IT HAS BEEN BOILED.

On this subject Mr. N. E. France, General Manager of the National Bee-keepers' Association, and official foul-brood inspector for Wisconsin, has some decided ideas.

Mr. President, the care of honey from infected hives has been one of the greatest hobbies of my work in our State. About five or six weeks ago I received notice that a whole apiary was to be moved from Wisconsin to Iowa, and that there was infection in that yard. I was not aware of it. I went there and found infection; and in order to hold the man I put a printed quarantine card upon the yard, and said, "You dare not move one thing. It must be treated right here." But he said, "I am away from home on expense, and I can not afford to stay." I replied, "Sir, if you were sick with the smallpox you would stay. This is not smallpox, but to the bees it is equal to it."

He had four colonies of bees all ready for shipment, but they never left the city. The honey was extracted from those combs with the understanding that it should all be used as a food consumption in two families who knew what they were using, and that the dishes or cans in which it came were at my mercy, and they were disposed of. Infected honey, I have not been able to say positively, is injurious to human health, but I can not for one moment recommend it. I have used some of that honey purposely from some badly infected combs myself, and I fancy I have received some ill effects temporarily. One man in one county extracted honey where the brown rosy matter was in some combs, and went into the honey visible to the naked eye, and that honey he himself used, and his family, and he is still living and in good health. To go back to the point of what we were going to allow with regard to this honey, in two cases where they had considerable of it I allowed them to ship it to bakers, marking the barrels and notifying them that it was infected honey, and that those barrels must be burned. Otherwise I have not allowed any one, where I have known of infected honey in the State, to do any thing with that honey but either to destroy it totally or boil it, after which it is not of any value; because if you boil it enough you have blackened your honey till there is no commercial value in it.

Mr. Ramer.—Would it do to feed to the bees again after boiling?

Mr. France.—Don't take the chance. I believe it is possible that that honey can be boiled and used again, from the fact that I made a desperate effort twelve years ago to save every thing in a yard of over 200 infected colonies. We took the hives, cleaned them, and put the bees back into the same hives, extracted and boiled the honey, and, having a foundation outfit on the farm, we made some infected wax into comb foundation, put the bees on to that, and fed them with boiled infected honey. That was twelve years ago, and no disease has shown up since; but I would not want that to become a general public statement, from the fact that any one else might not be as thorough. We boiled that honey to a finish. I have seen honey that has been called boiled in which the germs of the disease were plentiful and alive. There have been in my State and in adjoining ones, not giving names, nine instances where honey from an unknown source has been used as a means of feeding bees for winter stores, and in those cases it has brought the disease to their yards. Do not for one moment buy honey to feed to your bees unless you know positively the source it comes from. Sugar syrup is better than to take those chances.

Dr. Bohrer.—I have some at home canned up, but I will not sell it. I am too good a Christian to sell it. I would as soon go into my neighbor's barn and steal his horses. As to extracting it, when it reaches the stage Mr. France has spoken of, that is, with a large number of diseased larvae, and decomposed and rosy, I never extracted any honey from a frame of that kind. I simply take the frames that have no brood in them and extract the honey from them. If I use that at all, I use it on my own table in the winter time. Where Mr. Poppleton lives he had better not use it at all, because he lives in a warmer climate and bees get out every day in the year, and they may get at that honey. You must not take any chances. If you can not use it during the cold winter weather it is better to dig a hole and bury it.

STRAY STRAWS

BY DR. C. C. MILLER, MARENGO, ILL.

THAT 15-INCH snow-blanket has had another 15 inches added in this locality.

LIGHT-BROOD foundation with 7 splints works all right here.

"WE DO NOT BELIEVE cold actually kills bees," p. 35. No, no more than it does people. But it may kill either bees or people.

IN THE *Canadian Bee Journal*, page 424, J. E. Hand reports successful wintering on solid slabs of honey with two inches between the combs.

H. E. CROWTHER had no buckling with 5-inch splints, and I had. He gives the reason, p. 22. He used horizontal wires and I used none.

LOUIS SCHOLL, you're a goose. There you go, p. 39, trying to get those Colorado fellows to run for bulk honey; and then when they flood your market with it where will you be?

TO EXCLUDE the queen from upper stories, J. C. Clayton, in the first story over the brood-chamber, spaces extracting-combs two inches. He says the queen will not pass up through this.—*British B. J.*, 474.

A PLANT-LOUSE, in five hours, secretes an amount of honey-dew equal to the bulk of its own body. A linden-tree with 24,000 leaves can furnish 50 pounds of honey-dew.—*Deutsche Imker aus Boehmen*, 406.

I THINK it has been suggested that bees cluster front with honey further back because the honey is thus safer from robbers. Is it not just possible, also, that the brood-nest is near the entrance for the sake of the fresher air there. [That has always been our theory.—ED.]

C. G. HULICK, p. 43, if moisture here would use up an unpainted hive in two years, as it does yours, I think I'd paint. But when it lasts 25 years, I'd rather have the advantages of no paint. The chief one is that the moisture from the bees' breath dries out more quickly in an unpainted hive.

I HAVE A NOTION (but I don't know) that solid frames of honey with a two-inch space beneath will be all right for outdoor wintering. But the bees will at once proceed to make your sort of brood-nest, Mr. Editor. [They may make that nest, but the cold slabs of honey in the mean time may give them a set back.—ED.]

G. M. DOOLITTLE, I always supposed that, in all normal superseding, queen-cells were started before the death of the queen; and until your statement, p. 759, I never knew that blacks used post-constructed cells for superseding—never saw it in print before. But I can't understand why a queen from a larva a day or two old isn't just as good as one from an egg laid in a queen-cell.

D. M. MACDONALD, *British B. J.*, 469, quoting American approval of sweet clover, says: "I have frequently intended asking if any

one in this country grows sweet clover. . . . I wish I had some seed!" Is it possible that there is a spot in Scotland where the plant is not known, either under the name melilot, Bokhara, or sweet clover? If so, my Scotch brother, let me know, and I'll send you some seed.

GERMAN bee journals are talking about the discovery of Dr. Kuestenmacher that honey contains more albumen than has heretofore been credited to it, in a form more readily assimilable than in any other albuminous food, making it specially valuable from a medicinal standpoint, and making it thus possible to distinguish chemically between pure and adulterated honey.

THE GERMAN EMPIRE, according to the census of Dec. 2, 1907, now made public, averages 19.2 colonies of bees to the square mile, ranging from 9.58 to 44. *Deutsche Bienen-zucht*, 184, in giving these figures, says the difference is not so much due to difference in pasturage as to the advancement of bee culture in the different parts. If we plant the apiaries three miles apart there will be from 86 to 396 colonies in each apiary, averaging 172. As pasturage is supposed to be better here than in Germany, it looks as if E. W. Alexander was right as to our being too easily scared about overstocking. Or does their overstocking account for their poorer yields?

C. F. BENDER says, p. 43, "But I think it is perfectly safe to keep them in pairs, as I never knew bees to mistake right and left." I'm afraid the importance of that statement is not generally understood as it should be; and Mr. Bender gives a striking proof of its correctness. Suppose you have a straight row of hives 8 feet apart in the row. Now replace each single hive with a pair, and there will be no more mistakes about entering wrong hives than when the hives stood single. The bees of No. 7 may make the mistake of entering No. 5 or No. 9, but they will never enter No. 8, the other hive of the pair. You see that, by putting hives in pairs, you double the number on the same ground without at all increasing the danger of entering wrong hives.

THE TWO WAYS I treated black brood are run together as one, p. 45, and the mistake is made of giving combs instead of empty frames. The pith of the shaking treatment is this: Brush, and leave in the hive one foul comb and two empty frames (no starters); when comb and eggs appear in empty frames, remove foul comb and fill up with foundation. The improved Alexander treatment runs thus: Unqueen; ten days later destroy cells and give a virgin. That's all. But please remember this is not for American foul brood. [It remains to be seen whether colonies given this treatment will stay cured next year, and the year after that. There are some who say European foul brood (black brood) can be cured this way for one season, but that it may come back the year following. Keep a sharp eye on these colonies next season and report.—ED.]

BEE-KEEPING AMONG THE ROCKIES.

BY WESLEY FOSTER, BOULDER, COL.

SAGGING OF SECTION-HOLDERS.

When a super gets full of honey the section-holders sag in the middle and destroy the correct bee-space above and below, and also throw some of the sections out of shape. A section-holder slat should be $\frac{3}{8}$ in. instead of $\frac{1}{4}$ to overcome this fault. I have seen the holders sagging nearly the full bee-space, and resting on the tops of the frames.

A HARD WINTER.

On Thanksgiving day the weather changed from the usual Colorado fall, of perfect days, to regular severe cold of the Eastern State variety, with no warm weather up to this time, except for a few days about Christmas, when the bees had a cleansing flight. Few stores have been consumed, and the dead bees have not shown up much on the bottom-boards. On the whole I think outdoor-wintered bees are doing just as well as the most hopeful could expect. The prolonged cold may tell on the vitality of the colonies later on, but we are not grieving yet. Hot cakes and biscuits are being eaten these cold snappy days, and I can see where last year's crop is fast passing to the "ultimate consumer." The glucose people seem to profit also by the hot-cake weather, and no wonder; for a gallon of corn syrup costs but fifty cents, while honey is a dollar and a half. Many do not object to poor food if they can get it cheaper. What we bee-keepers must do is to educate the public to use the best and purest foods.

Comb honey still unsold which has commenced to granulate is the most serious difficulty to be met in the rapid spread of honey consumption; so all cases should be gone over, and the slightly candied combs removed. This can be melted down, or sold to those who like the candied article.

THE RANGE OF FLIGHT VARIES.

This question of the distance bees fly for honey depends much on differing conditions, topography of the range, direction the prevailing wind blows, fragrance and abundance of the honey flora, position and facing of the bee-yard. All these factors enter in quite largely before one can say when a location is worth any thing or is already overstocked.

First, taking up the topography of the district over which the bees have to forage. An apiary which we bought was located in a sort of hole. Dry hills rose on each side; and, though the distance to a good number of alfalfa fields was not far, those bees did only about half as well as some which were only three-quarters of a mile distant. I can come to no conclusion but that those bees could not see, smell, or hear of the blossoming fields till too late to do really good work. The odds were too much for the bees to com-

bat in some particulars. Whether I have offered the real solution I can not say; but the fact remains that bees but a short distance away gathered a good surplus.

As to the wind affecting the direction bees fly, I think this would apply only where the wind is very constant, making it almost impossible for flight in other directions. One would think bees could see that, if they fly against the wind, the wind will be at their backs on the home stretch; but if the wind continually blows them back, making access to the desirable fields difficult, they are not likely to persist against the odds.

One reason the sweet clover is visited by the bees so plentifully is that it is so much more pronounced in odor than alfalfa. I would not admit that sweet clover is more fragrant, but it has more odor.

As to bees guiding their flight according to the way they get started from the apiary, I think this depends very largely on the abundance of nectar in the flowers straight ahead. If a long dense grove of trees cuts off sight and flight to the west while there is an abundance of virgin territory to the east it is reasonable to suppose that very little work will be done through that grove barrier till the district to the east begins to fail.

THE ANSWER TO CROWTHER'S PROBLEM; THE DISTANCE OF A GOOD WATER SUPPLY.

Giving my ideas on Mr. Crowther's problem, page 22, Jan. 1, I will say that I think the bees located three-quarters of a mile above the irrigation canal were so far removed from the good honey acreage that much energy was wasted in gathering a surplus. Bees do not fly at all profitably for honey more than a mile and a half, and that three-fourths mile of barren ground discouraged the more timid bees, if there were such, and I do not see why we can not say this, for some bees are out in the morning as soon as the sun rises, while the large majority do not start to work till encouraged by the successful efforts of the early ones.

The distance from a good water supply would account for some of this difference in yield. I do not imagine that a great barren plain looks very inviting to the bees, for it is their nature to live among trees and grass and flowers. I wonder how many of the readers know the lost and lonesome feeling that comes from being alone on a level stretch of buffalo grass and sand. The only thing bearable is knowing the distance to water, grass, and civilization. But suppose one were a bee, and did not know whether there was anything green on earth; then he would feel like curling up in a ball and giving up this world as a great mistake. I imagine that bees placed out a mile from any irrigated land feel like doing this very thing.

Whether bees will fly seven miles down from the mountains to the valley and gather alfalfa honey, I must say that I think the territory nearer home should be scrutinized very carefully before placing a great deal of confidence in the seven-mile flight.

NOTES FROM CANADA

By R. F. HOLTERMANN.

FOUL-BROOD ILLUSTRATED.

The Department of Agriculture for Ontario has ordered from Germany 5000 copies of a lithograph of a foul-broody comb which was published by the *Leipzig Bienen Zeitung* some time ago. It is an excellent illustration, and it will be a great educator as to the appearance of foul brood in the comb.

POISONOUS COMB HONEY.

On page 21, Jan. 1, Geo. M. Lord relates an experience in connection with some comb honey taken from the eaves of a neighbor's house, which gave cramps and nausea. I have heard of honey taken from a bee-tree having this effect when bees had been crushed between the comb, causing them to sting the comb and inject poison into the honey.

THE TIME WHEN BASSWOOD BLOSSOMS.

G. M. Doolittle, page 1910, draws attention to the great variation in the time of blossoming of basswoods. Some always blossom early, while others are always late. I have frequently noticed this. I am, however, also of the opinion that two localities 100 miles apart may make a difference of ten to twelve days in the time of blossoming. I have such a case in mind now.

THE MUSIC OF BEES.

When I read on page 29, Jan. 1, the statement of P. W. Richards, to the effect that he, having a musical training, can tell by the pitch of the note the bees make whether the queen is there, and if so in what part of the hive, I felt like placing the following notice in GLEANINGS:

"Wanted, an expert musician who also wants to learn bee-keeping, we to exchange knowledge."

But I do believe this is possible, and I believe F. J. Miller, London, Ont., deserves great credit for being courageous enough to bring forward so new a thought.

THE FOLLY OF MIXED GRADING.

On page 555 Editor Root endorses the statement made by J. E. Crane, page 560. Both condemn making up a shipment where No. 1 and No. are mixed, or the dark honey is with light. There has been altogether too much of this done. If the purchaser has been foolish enough to pay for the goods in advance, and the seller is irresponsible financially, the purchaser is very cautious about purchasing any comb honey in future. If the seller has not been paid for his goods in advance he will want to deduct enough from the original price to cover all trouble, risk, and loss; and if he is as unscrupulous as the seller he will try to deduct a good deal more. There are good bee-keepers who can not find the highest market for their honey; but too many when they have a customer do not hold him, because the sample they sent

is better than the goods produced, or the goods shipped are not equal to the description by word of mouth or letter.

J. L. BYER.

The readers will be pleased to have seen the Byer family group as shown on p. 779, Dec. 15. Mr. Byer comes of bee-keeping stock; the family is well and favorably known through a wide section of country, and it has been my pleasure to visit among them several times. Our friend is not only a good writer but a good speaker. When he speaks he does so with energy; and he, Sibbald, Miller, and several others would make excellent farmers'-institute speakers, which, in my estimation, are much needed in Ontario if the slipshod and disinterested bee-keeper, who will not go to a bee-convention or take a bee-paper, is to be reached.

ROBBEY-TRAPS.

Referring again to robber-traps, I can not see how honest bees, that are active in their instincts, and ready to avail themselves of every opportunity to gather honey, can help being drawn into these traps. If there is any law in the life of the bee that discriminates between the honey which it is legitimate for her to gather and that which is not, I don't know of it. If I were buying bees I would give the preference, other things being equal, to the colony which would be the quickest to scent or find out the best source of honey, no matter what that source might be; and I doubt if there would be any distinction manifested as to quickness of discernment in stocks were the source blossoms or exposed honey, if the former source were not available. That being the case, it appears to me that, by setting out robber-traps, bees are punished for their activity, and other bees are drawn into the difficulty. As to Editor Root's remark, "If he [Holtermann] can get a new man who will let no robbing get started he is doing better than we can," just let me tell you in confidence, friend Root, that, in robbing time, I take good care to be outside myself always, and watch with an eagle eye every thing that is being done; and I find it a very difficult task to impress even *men of experience* with the absolute importance, when working in the apiary in robbing time, of preventing the bees from getting a start.

I remember that Mr. Paul Mickwitz, of Finland, whom the readers of GLEANINGS know, lamented and longed for the experience of a good robbing time in the season that he spent with me. I said to him, "I shall take *mighty* good care that you don't have that experience at my expense," and he did not. He, however, had his wish gratified at another apiary in the district. Of course, I do not speak of special emergencies such as in a queen-rearing apiary. There are some things better than others; or perhaps, I had better say, worse than others, yet neither may be desirable. The article in the *British Bee Journal*, I judged, was intended for the average bee-keeper.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

WHEN SHOULD WE EXTRACT HONEY?

"Mr. Doolittle, I had thought of working mainly for extracted honey next season; but from what I have read, it is not at all plain when I should extract the honey from the combs. I find that most bee-keepers, those living in the northern and eastern part of the United States, advocate leaving the honey on the hives till it is all sealed over, some even saying it should be left on till the end of the season, or at least till the flow from clover or basswood is over; while those living in California and in the most of the Southern States claim that it is a waste in time and honey to leave the honey after the combs are half sealed over. Others advocate extracting when few or no cells are sealed, and then ripening the honey in tanks. Do you think locality plays an important part in this matter?"

"Undoubtedly locality does have something to do with this, for under certain conditions honey may be in excellent condition to extract when the combs are only partly sealed over; while under other conditions, and with certain kinds of honey, it would be much better if not extracted until the combs were fully sealed, and, better yet, if left on the hives from one to four weeks longer. These are points with which the expert is familiar, though often overlooked by the inexperienced. You can not go far out of the way by following the advice of such men as Hutchinson, Root, Coggsall, and others, who advocate leaving honey on the hives till the end of the flow from the nectar-plants which give what is termed 'white honey,' or till the end of the bloom of those flowers which give your main crop of white honey, if the mixing of the different white honeys hurts the flavor and sale of your product. Expert skill in handling extracted honey is not so important in the arid West, as I understand it, as it is in many other localities. Conditions there are naturally favorable to the caring for honey under almost all circumstances; not so, however, in this State and in many other places."

"But some of the writers claim that honey can not be left on the hives until sealed, without materially lessening the crop. They start extracting when the combs are sealed along the tops a little, and from that to the middle. This honey is then allowed to stand in tanks covered with canvas, and evaporated until it attains the proper consistency. It would take the bees from three to five days to complete the sealing of such combs, which time would be nearly or entirely wasted on account of there being little or no room in which to store honey while the remaining cells were being capped over. I remember one of these writers laid particular emphasis on these words, 'The honey can ripen just as well in the tank as in the hives,

and the majority of the bees are not compelled to lie idle, or resort to the brood-combs, to find room to store their honey."

"But such a state of affairs is not necessary, even if such an assertion held good; for the extracted-honey producer sees that colonies have sufficient comb room for the storing of honey while the combs which are filled are being sealed over."

"But that would require a large investment for hives and combs that would not be needed by the frequent-extracting plan, as well as not giving as good returns at the end of the season. Another writer said that nearly or quite nine-tenths of all loss of weight caused by the curing of newly gathered honey in the hive occurs during the first twelve or fifteen hours after it is first deposited in the combs.' Now, if this is the truth I can see no reason for leaving the honey on the hives several days longer, thus limiting the storage capacity of the hive, just to allow the honey to lose the one-tenth of weight necessary to ripen it sufficiently for market. Why not extract it and allow the honey to ripen in the tank, thus giving the bees room to work without piling up-hive after hive of combs till the end of the season, this requiring quite a large investment of capital, which, in my case, would have to be borrowed?"

"If it were proven that honey of a nice flavor, equal to that of honey which has been ripened on the hive and prepared by the bees for a month or more could be produced by the tank method, then your reasoning might be correct; but the honey which holds its customers year after year is not, as a rule, honey which is extracted unsealed. The extracting and sale of *unripe* honey is not to be defended, and will react against the one practicing it, for such a one will not be likely to sell this quality of honey twice to the same purchaser."

"I am far from advocating unripe honey; but if honey can be extracted before it is fully sealed over, and then ripened in a tank so that it will weigh not less than twelve pounds to the gallon, retaining at the same time that nice taste and flavor, why do you and others oppose it?"

"Very many have started out with just the same ideas; but, so far as I know, all who have really been anxious to improve the call for extracted honey are now leaving it with the bees till it is fully sealed over, and the most of our really practical extracted-honey producers leave it with the bees till there is danger of having two or more kinds of honey mixed."

"The extracting of partially sealed honey, and allowing it to ripen in a tank, while the bees are filling the combs again, is something which appeals to me strongly, and, if I thought I was scientific enough I should do so, for I am firm in the belief that the expert who uses this method, and thus increases his yield, is to be commended. I would not class him as an unscrupulous person, but a level-headed business man."

"And my advice would be, 'go slow.'"

GENERAL CORRESPONDENCE

ABSORBENTS VS. SEALED COVERS.

How Much Packing shall we Use? an Interesting Discussion of the Whole Problem of Outdoor Wintering.

BY LEON C. WHEELER.

Mr. Editor:—On page 786 you make the following statement in reply to a letter from Chas. G. Macklin:

"Our experience has been practically the same as yours." "We can not understand why any one should get better wintering results by the use of damp, wet, or (worse yet) frozen absorbents."

It appears to me, Bro. Root, that you are taking an unfair position here, for you assume something which, in my experience at least, is not a fact, and then from that assumption draw erroneous conclusions. Because unsuccessful outdoor winterers find their absorbent cushions damp or frozen it does not necessarily signify that the successful winterer must have those conditions simply because he uses one principle used by the unsuccessful man.

One thing must always be taken into consideration before deciding on any method regarding the handling of bees; and that is, that we are not dependent on one feature of the management alone, but that every condition and every requirement must be the same in all other parts of the hive to make the test complete.

This is none the less true in regard to a decision of the relative merits of the hermetically sealed hive or the one allowing free upward ventilation.

It would give me great pleasure, Bro. Root, to have you come and make an examination of my bees at any time this winter, and see if you can find any dampness in any of them; and there is not one hermetically sealed hive in the yard. You would probably find it to a certain extent in a few of them; and now let me describe the hives in which you would find it.

They are double-walled hives with a two-inch packing space, and with a cover only six to eight inches deep—not far from the dimensions of the Root chaff hive, I believe. If I were compelled to use that kind of hive in this climate I would go one step further than Bro. Root, and say it is impossible to winter out of doors successfully any way.

My father-in-law, who has kept bees nearly forty years, has always wintered principally in chaff hives, and is ranked to-day as one of the three most successful outdoor winterers in this State, and he has never used sealed covers on any of them; but he does not use standard chaff hives. The hive that he uses is made with sides four inches deeper than the inside hive, and a cover eight to twelve inches high—making a pack-

ing space above the bees of not less than twelve inches, and with an outside packing space of from four to six inches.

When he persuaded me to go into the bee business on a small scale six years ago he sent over a couple of these hives. These two colonies increased to six by fall, and the hives were built of the same style for the other four. Although it was my first experience with bees, every colony wintered perfectly with free upward ventilation.

The next year I bought and increased to 27 colonies; and as I had learned quite a lot from reading the bee journals I built some hives on the same plan as the Root hives, with a two-inch packing and shallow covers. Well, I saved the 12 colonies wintered in the old-style hive; and, if I remember rightly, about six out of the fifteen wintered in the new hive. Strange to say, I did not learn my lesson thoroughly that winter; but another winter tried with the sealed covers cooked me, for I lost nearly all of them wintered in those hives, and about half of those in the big hives. Notice, I used sealed covers this time. It is only fair to say, however, that some of them were starvation cases, although they had the usual amount of stores in the fall.

Last winter I packed these light packing hives in a second packing of straw with a roof overhead, and they all wintered, although they did not come out in as good condition as those in large hives.

My experience as a whole with the large hives is perfect wintering in every instance except the one winter when I used sealed covers. With the smaller hives I had imperfect wintering in every instance; but it was worse the winter I used sealed covers.

Now about those damp absorbent cushions. I have in some instances found them damp in those lightly packed hives, but never in the large hives. What makes the difference? Why, it's as simple as falling off a log. The moisture thrown off by the bees condenses on the cold sides of the hive, on the same principle that steam inside of a house condenses on the windows. Why doesn't it condense on the inside walls of the house as well as on the windows? Simply because the outside air hasn't the chance to act on the inside walls with sufficient force to make them cold enough.

Now, this same principle holds good in the bee-hive. The warmer the hive can be made, the less chance for moisture to condense in the hive. The heat from the cluster being that much closer confined, it will take care of that much more moisture. Again, a hive packed with only four or five inches overhead, and no air-space above the packing, allows too much of the heat to escape in this direction, while a hive admitting six or eight inches packing, and an air-space of about the same depth above the packing, retains the heat much better. The packing, being warm, does not condense the moisture, but allows it to pass through it into the air-space above, where it is taken care of without any detriment to the bees.

Only a few moments ago, since beginning this article (the date is January 3), I went out and examined several colonies, and found them all dry and warm.

I should like to see Bro. Root try a few colonies in the hives I have described, and see what the results would be in using free upward ventilation.

Barryton, Mich.

[It rather appears to us that your indictment is not so much against sealed covers as against a too small double-walled or chaff hive—that is, a hive with too narrow spaces between the walls. We have read your article very carefully, and note that you tried the sealed covers only one year with your large chaff hives, and came to the conclusion that they were a failure. You also state, further on, that your experience with sealed covers on the smaller chaff hives was not satisfactory. We will admit that you may be right for your locality when you pronounce in favor of a larger chaff hive with an opportunity for the moisture to pass up through the packing material unobstructed by any sealed cover beneath.

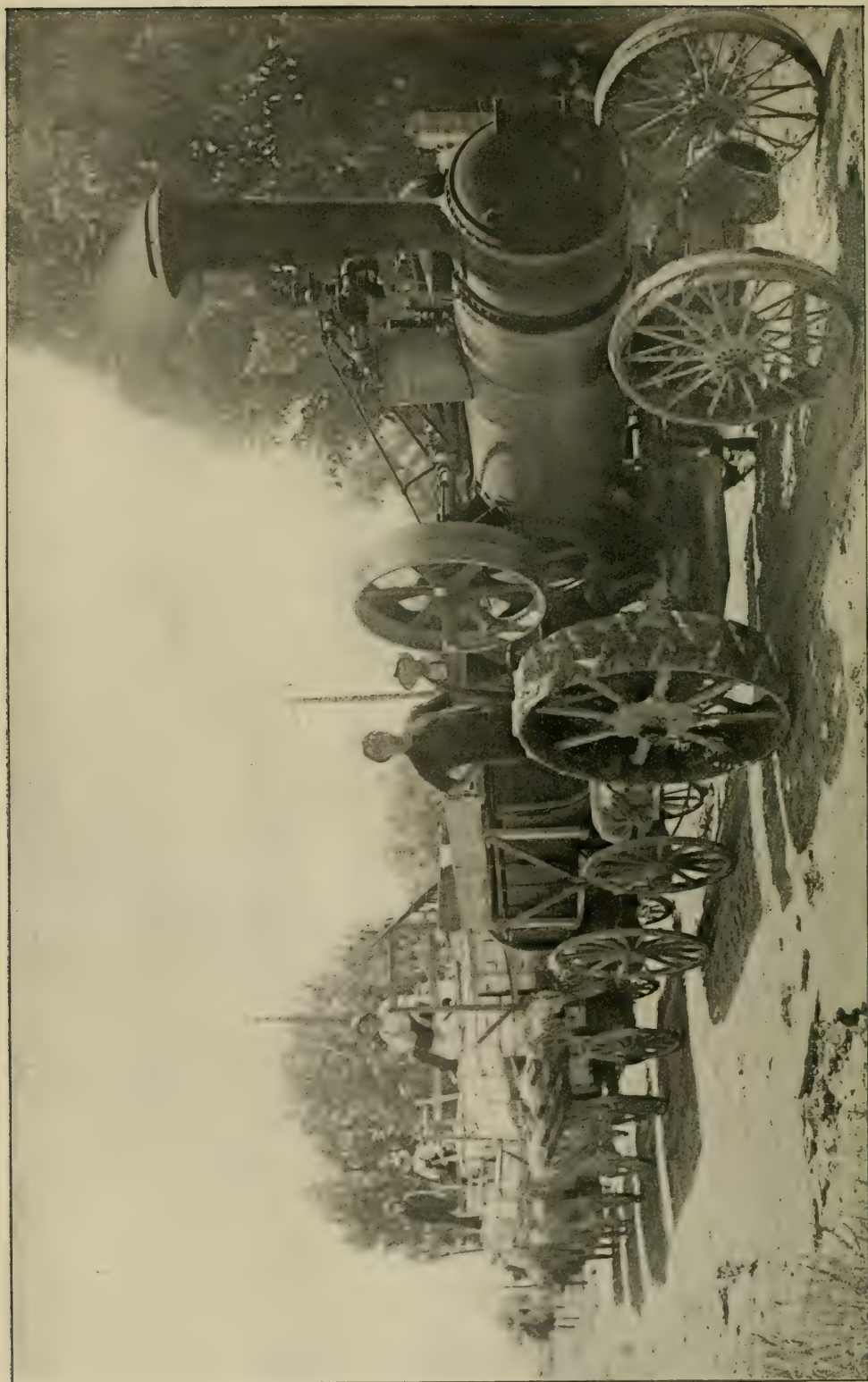
You are probably aware of the fact that the writer had active charge of our bees from the year 1878 on to about 1883. During that time we used the large two-story Root chaff hive. This had walls about 8 inches thick around the brood-nest, and permitted of packing material from 6 to 8 inches thick over the brood-nest, with free air-space of five or six inches on top. For about fifteen years we wintered our bees outdoors in this sort of chaff hive; and from your description we should infer that our hive was even larger than yours. During nearly all of the period mentioned we used absorbing cushions with no sealed cover, and wintered successfully, except the winter of 1881, when our loss was very heavy, as was also the loss of nearly all bee-keepers throughout the country. In the early 80's practically every one who wintered outdoors used absorbing cushions. Taking every thing into consideration, the writer feels that he has had as much or more experience with large hives and absorbing cushions as he has had with the smaller chaff hives and sealed covers. The records show that we have been just as successful with the latter as with the former. The large Root chaff hives cost nearly twice as much as the present chaff hives now in use. When we were using these big hives and absorbing cushions it was noticeable every spring that the cushions were more or less damp, the amount of dampness depending upon the strength of the colony in the spring. At that time it was our custom, on a warm day when the sun was shining, to lift the covers, remove the cushions, lay them on the ground, letting them dry out all day. Just before night we put them back in the hives again. This was a regular program every spring. If we did not dry out the cushions we were likely to find dysentery very shortly.

Later on we began trying the big chaff hives with absorbing cushions and sealed

covers, half having the absorbing cushions and the other half sealed covers. The result for a number of winters left us in doubt. We kept on with our experiments, however, and about this time began using the smaller chaff hive—first with absorbing cushions, and later with sealed covers. The smaller hives with sealed covers gave unmistakably better results than those with absorbing cushions. We also came to the conclusion that the small chaff hives with sealed covers would winter the bees about as well as the large chaff hives with absorbing cushions. The initial cost of the former finally decided us to abandon the big hives altogether. For the last fifteen years we have been wintering outdoors in the small hives with sealed covers, and any one of our apiarists will certify that our wintering has been remarkably good.

You probably fail to take into consideration the difference in climate. It is probably much warmer with us, and it is not so necessary to have a large hive; but a chaff or double-walled hive is an expensive proposition at best. These enormous chaffs especially really add too much to the operating expense in a bee-yard. While it is undeniably true that they are better in a climate like yours, because of the added protection, it does not follow that they afford the cheapest way of wintering, all things considered. Our argument has been this: That if the smaller chaff hives in a given locality with sealed covers will not bring the bees through in good condition the bee-keeper for that locality had *better by all means* adopt cellar wintering. When a chaff or double-walled hive has to be so large, with a packing space of anywhere from 6 to 10 inches in order to winter successfully, it is cheaper to winter indoors. The fact that the majority of bee-keepers in your State, especially the northern sections, winter in cellars or clamps, rather goes to show that this advice is not far from right. From the standpoint of economy it would be cheaper to use single-walled hives and build a repository wholly under ground for sheltering them during the winter than to put that same yard in these monstrous chaff hives. Portland cement is coming down, cheaper and cheaper, and lumber is growing higher and higher.

Having said this much we are not going so far as to say that the sealed cover is better or worse than the upward ventilation and absorbing cushions for all localities. If any one has been successful in wintering with the latter we would advise him by all means to stick to it. We are using at Medina the two methods side by side. Just yesterday (Jan. 12) we went out into the bee-yard and found the colonies provided with upward ventilation and absorbents were wintering just as well as those with sealed covers; but the absorbents were damp, in some cases quite wet. We will admit that, if we were using the old Root Jumbo chaff hive, at this stage of the year the absorbents would be dry. It is only when we come toward spring that the dampness seems to show up.—ED.]



MOVING FOUR WAGONLOADS OF BEES BY TRACTION-ENGINE IN CANADA.

MIGRATORY BEE-KEEPING ON A LARGE SCALE.

A Brief Mention of Some of the Difficulties Encountered when Moving Four Wagon-Loads of Bees with a Traction Engine.

BY R. F. HOLTERMANN.

Migratory bee-keeping, moving bees to various pastures, is, in Europe, a much more common practice than in America. In Europe, so far as I know, the main object in moving bees—aside from moving as a result of changing owners—is to give the bees the advantage of the heather and buckwheat bloom. In the United States, in addition to the objects given above, some have in view moves north and south, for considerable distances, to prolong the honey season.

My first move to bee pastures was some thirteen years ago; and since that, almost every season I have moved sometimes to clover, sometimes to basswood, and sometimes to buckwheat. During these years I have moved many and many a wagonload of bees, many a carload, and also boatloads including a tug and scow, boats propelled by gasoline-engine power and by the wind. This season there has been added to my experience, as seen by the illustration in connection with this article, moving by means of a traction engine.

The most anxious moments of my bee-keeping experience have been spent in moving bees, and I have no doubt whatever that these have resulted in many a gray hair being added to my head. And let me say here, that, unless undertaken in a very small way so that the responsibility and labor are greatly lessened, the chief point to consider is whether the bee-keeper is rightly constituted to bring this work to a successful issue. If he is to surmount the obstacles which lie inevitably in the path from time to time, he must be willing to throw into the work the best his body and mind can produce for the time being. Unless on a small scale this work must, of necessity, be laid out considerably ahead of time, and must, therefore, be carried out regardless of weather and other conditions, at the time set. For instance, if four or five teams are ordered for a certain night (we always try in summer to move at night), farmers often have to make special preparations such as putting hay-racks with straw on their wagon, greasing wagons, shoeing the farm horses in preparation for a long and unaccustomed road trip, etc. These farmers and the bee-keeper perhaps can not readily communicate with one another. This makes it imperative that *all* go, rain or shine, hot or cold. If the trip is made by train or boat the same holds good with the added responsibility of having teams ordered at the other end of the trip. If by boat, owing to the danger of storms, the risk is even greater; and with the danger of having a sail boat, by reason of contrary winds or a calm, left on the water during the heat of the day with the sun to beat down into the boat, the risk

is incalculable. Although I have come safely through every experience, the sail boat for transporting bees is a thing of the past with me. I have seen enough to feel its danger.

In the first carload of bees I shipped I lost forty colonies out of 340; since that, so far as I can recollect, I have lost none by this method of shipping. Thirty-six-foot cattle cars are used. To give the bees air I have used my own invention, a portico to the hive with the sides slightly projecting, and in these projections on the inner side a groove is cut into which a screen can be quickly slipped preventing egress on the part of the bees. The hive entrance is the full width of the hive with a depth of $1\frac{1}{4}$ inches, and the portico leaves $2\frac{1}{2}$ inches between the screen and the front of the hive. All the ventilation the bees get during a move is through this screen. My experience would lead me to urge that the bees be frequently sprinkled with water when in transit—the colder the water the better. To spray water all over the hives and the car is also an advantage. The evaporation which follows lowers the temperature. We watch the bees, and when they run about in the portico like a drove of sheep, manifesting excitement, and with their tongues protruding through the screen, we know that there is danger.

In moving bees I avoid using hives where the brood-chambers consist of combs newly built, preference being given to combs wired and toughened by cocoons. If the brood-combs are not heavy with honey and brood, so much the better; but to this latter I pay no attention, simply taking conditions as they are.

During the past summer, having to move bees some forty miles I consulted with the owner of a traction engine, explaining to him that we should have both clay and sand road; and after his assertion that he could draw the load I decided to give the plan a trial.

Some 110 twelve-frame hives with one or two supers on each were loaded on four wagons with racks filled with straw. The engine had also a water-tank, and upon this tank a platform with 1500 lbs. of coal. The bees were loaded, after being interrupted by a thunderstorm which promised much, but let us off with only a slight shower.

About 10 P.M. we moved off at a pace of about $4\frac{1}{2}$ miles an hour. Every one felt that matters were working very smoothly. The party consisted of Mr. Shurr, the engineer and owner, standing on the engine step at the right hand of the engraving—a man who showed himself a master hand at his work, as we did not have to uncouple our long train even once to turn corners. By his side is Mr. Shurr's assistant. With the bees were Walter Ebert, with whose father I had the bees; next, Louis Held; and on the last wagon, Charles Hatton, of Ohio, whom I had met at the National convention in Detroit, and who spent some time with me to gain greater experience in the production of extracted honey. He said he shone in a long

day's work, and he had his opportunity, as it proved.

Our splendid start did not let me forget that there might be danger ahead, as there had apparently been a heavy thunderstorm, and frequent long trips had given me experience as to variations in rainfall in a section of country; and I knew how slippery clay roads under certain conditions might be. I used to be an advocate of wide-tired wagons until one night, moving bees on slippery roads, we had such wheels on one wagon, the rest being narrow. I followed that wagon on foot for six miles until we passed the clay, and again and again the rear slewed around until at right angles to the road, with every prospect of upsetting unless the driver followed the movement with his horses and the front wheels. From that night to this day I have felt that the advocates of legislation to compel the use of wide tires did not know their business.

The clay roads became more sticky; and, before we knew it, two wagons were almost over a steep bank. With chains to the rack of the wagon, and to a fence post on the other side, we relieved the pressure on the slowly sinking wheel on the other side of the load. A portion of the bees had to be unloaded. Such situations caused delay; and after a time, owing to frequent stops, our water and fuel ran out. The former, owing to a long spell of dry weather, was difficult to get. However, we reached the gravel at last, and our spirits rose; and as we made good time these feelings gave vent through the steam-whistle, as, in the engineer's estimation, worthy objects of salutation were passed on the road.

We thought our difficulties had been surmounted as we passed, like a triumphal procession, through Port Dover. The summer tourists were snapshotting the procession from every direction, thinking, as one expressed it to me, such a scene did not often present itself to the photographer. But when we came to the sand we found it too loose for the engine-wheels to secure a purchase. Here the engineer had reckoned without his host. It would take too much time to describe the troubles we encountered—the broken cable (for each wagon drew from one cable, thus preventing the strain from the rear wagons having to be borne by the preceding), hunts for water for bees and engine, etc. We had a splendid band of workers who made the most of every situation and opportunity. At the most critical time Messrs. E. Trinder, President of the Norfolk Bee-keepers' Association, and Jas. Armstrong, foul-brood inspector for the district, came along.

Seeing the straits we were in, Mr. Trinder gave us wood and water, refusing any pay. Mrs. Trinder prepared food for the party on the same terms, and then the above-named gentleman went ahead and arranged to put the bees at a nearer point, where they were placed by an exhausted party almost twenty-four hours after they were loaded. We all made a solemn resolution never again to

move bees; but within a few days I had another night trip moving bees over the same road by wagon, followed by the shipment of a carload, and then four wagonloads the following week.

Any one moving bees should weigh well the cost, lay well his plans, judge well the chances as to honey, and not only be alert as to every thing going on, but carry the responsibility of the work and set the pace for his help. This means that some will have to carry a load that they are not able to bear. Others may refuse to work so hard, and in this they may have a wisdom superior to the one who practices migratory bee-keeping.

Experience has taught me that every teamster should be continually watched until he has proven himself a careful, thoughtful, and capable man.

Brantford, Ont.

WHY BEES GNAW COMBS.

Wax is Needed, and Bees Gnaw the Comb to Get it; they Never Gnaw it Away for the Purpose of Building Drone Comb.

BY L. B. SMITH.

It is stated by some good authority that if bees are given full sheets of foundation, all worker-sized cells, their instinct and craving will be so great for drones and drone-sized cells that they will often gnaw down a portion of the foundation and rebuild it with drone comb. I have watched this closely for the past 25 years, and have yet to see a case where the bees gnawed down the foundation, and rebuilt it *at once* with drone comb. You will notice that I emphasize the words "*at once*," for I have many times known bees to gnaw away at least a third of all the combs in the brood-chamber, and later rebuild it with drone comb; but at the time the gnawing was done the bees had no thought of rearing drones or building drone comb. My experience is that this gnawing away of either combs or comb foundation is done at a time when no honey is being gathered; and the more prolific races of bees, such as the Cyprians, Syrians, Carniolans, etc., are much worse at this naughty act of gnawing their combs than are the native black bees or the Italians. I will try to explain further why this is so. Of course, if comb foundation is in any way defective or distasteful to the bees they will proceed at once to gnaw it down and rebuild with both worker and drone comb; but at the time this gnawing away of ready-built combs takes place they will as readily remove drone as worker combs—that is, provided the combs are alike as to age, etc.

The question may be asked why bees gnaw combs, any way. The most common cause is the need of wax. At a time when but little honey is being gathered, bees secrete little or no wax; if a colony has a good queen and plenty of stores, brood-rearing will continue more or less all along, and there is a



Fig. 1.—Scholl's wholesale method of disinfecting by scorching hives, supers, bottoms, covers, etc.

constant call or need for wax by the bees for capping the brood and mixing with propolis to chink up cracks with, etc. At such times bees will not draw on their stores sufficiently to secrete wax; so to supply this want or need for wax they will begin gnawing the combs near the bottom next to the entrance of their hives, and will continue this gnawing until brood-rearing ceases or until a honey-flow comes on; and the more prolific races of bees, as above mentioned, will rear more brood during a honey-dearth than either Italian or black bees, and so, of course, need more wax, and gnaw their combs worse. It makes no difference at such a time whether it is drone or worker comb—it will be gnawed just the same.

Then these combs will not be rebuilt again until a honey-flow comes on and the bees begin to get crowded for room, and, of course, at such times it is only natural for them to build drone or store comb. I doubt whether bees ever gnaw down either comb or comb foundation with the full purpose in view of rebuilding it with drone comb.

We all know that there are other causes for bees gnawing their combs, such as moldy moth-eaten combs, and combs where pollen has caked and hardened in the cells, etc.

Bees here in the South will swarm if well supplied with honey at the swarming season, whether new honey is coming in or not. I have known them to swarm when no honey whatever was being gathered. If hived on foundation at such times they will draw out a small patch in the center of a few sheets, and the queen will start laying in the cells drawn out. By this time the bees will have used up all the wax scales they secreted before they left the parent hive, and they at once start to gnaw the foundation to supply the wax to cap the brood with, etc., and, later, a honey-flow comes on, they become prosperous, and soon more room is needed, and they will build store or drone comb in the places where they had a short time before gnawed away the foundation. The apiarist concludes, when he examines his bees and sees this drone comb where he had put

in full sheets of foundation a short time before, that the bees had gnawed down the foundation for the purpose of building this drone comb, when the truth was they had no thought of building comb of any kind when the gnawing was done.

Rescue, Tex.

WHOLESALE DISINFECTION OF FOUL-BROODY HIVES.

When this Can be Done Quickly and Cheaply there is No Excuse for Not Doing it.

BY LOUIS H. SCHOLL.

The controversy, both *pro* and *con*, on the question of disinfecting foul-broody hives, has been quite interesting to me; also the stand taken by different ones, the editor included. I want to try to put "the lid" on this matter. My experience in foul-brood work has given me a splendid opportunity to observe some of the things alluded to in many of the arguments. As some argue, it *may* not be absolutely necessary to disinfect hives, bottoms, covers, etc., from foul-broody bees; but as long as we can not put *is* in the place of *may* with absolute certainty, there is left the question whether it would not be best to disinfect our hives, etc.; and we would rather err on the safe side. If there is one chance in a hundred of the trouble re-appearing when we do not disinfect, we run the risk of subjecting all our bees to the danger of destruction by this dreadful disease, and we can not afford it.

I have always been a firm believer in disinfecting not only the hive-bodies, but bottoms, covers, supers, frames, yes, and every thing that has come in contact with foul-broody colonies or used in an apiary of such. The result has been a thorough job, and the cleaning-up of the trouble entirely; whereas we know of cases where the disease has re-appeared again and again in some apiaries where treatment was given by others who were not able to solve the problem as to why



Fig. 2.—Wholesale disinfection of hive bodies and supers. Kerosene is poured down the stack of empty bodies. Fig. 3.—A lighted bunch of straw is thrown in which sets the whole thing on fire. Fig. 4.—In a moment all is a roaring furra of flame. Fig. 5.—A spadeful of earth below at the draft-opening, and a cover on top finishes the job.

it should always crop out again. In these cases hive disinfection was not deemed at all necessary, and I venture to say that this is one reason why foul brood has to be treated over and over for years, many times in the same apiary. I have never been able to see why some of the small States that have had foul-brood inspectors for many years are not more free from the disease, unless it is that the disease reappears from some cause or other. And at least some cases can be traced back to non-disinfected hives, I feel almost sure.

Fig. 1 shows only one of several places where wholesale disinfecting was administered in my inspection work. All of the methods of disinfecting hives, etc., have been used more or less, but most of them are too slow. Instead of scorching out a single hive-body at a time we stack them up as in Fig. 2 to 5. The empty hives rest on a bottom-board which provides an entrance below to create a draft. A small quantity of coal oil is poured down the inside of the stack, as in Fig. 2. In Fig. 3 a bunch of straw, which was first set afire, is thrown in at the top, falls to the very bottom, and the fire runs up the streaks of oil. The draft upward soon makes all a roaring furnace of heat, which in a very few minutes would consume the entire pile of hives. A spadeful of loose earth to close the entrance instantly and cut off the draft, and a cover over the top as in Figs. 4 and 5, quenches the flames; but the heat remains intense for some little time, thus making splendid work of it. Those stacks in the pictures having covers on them have already been treated.

I used to think it was a waste of time to disinfect frames or save them at all; but experience has shown that it is expensive

to destroy them. In Fig. 6 is shown a large vat over a quickly made trench in the ground in which a rather strong solution of lye and corrosive sublimate in water is heated. The frames, gathered together in lots, are immersed and thoroughly boiled for a short length of time. They come out as nice and clean as so many new frames.

In Fig. 8 the same solution is used in a large round tank which is heated by a steam jet from the upright boiler shown. In our work, all supers that may have been on foul-broody colonies are disinfected just the same. These are immersed with the frames in place, as shown in Fig. 8, a strong spring wire reaching over the top of the super holding them in place. The work is rapidly done in this wholesale way as effectively as in many of the methods that require too much time and trouble, and which, on this account, are too often neglected.

Now, since we can do this work so easily and rapidly and thoroughly, and since it is a risk not to do it, can we afford to say that it is not necessary to disinfect our hives etc.? I say, no.

New Braunfels, Texas.

ITALIANS SWARMED MORE THAN THE BLACKS.

BY W. C. MOLLETT.

Being convinced by what I had read in the bee journals and books of the superiority of Italians over the common black bees I bought queens of good Italian stock and requeened all except two or three of my colonies. This was two years ago, and I was very much pleased with the Italians on account of gen-



Fig. 6.—The frames are boiled in a large vat and made safe to use again.



Fig. 8.—Disinfecting covers and bottoms. The whole super with the inside fixtures and all is lowered into the vat of lye and corrosive sublimate, which is thoroughly heated by steam.

tleness and more pleasing color. They seemed to be of a more industrious disposition, and I had no doubt they would excel the blacks as honey-gatherers; but I was sadly deceived the first year. For some unaccountable reason they seemed possessed of the swarming fever, and swarmed from May till July, seeming to pay no attention to any thing but preparing to swarm. At the same time, the blacks were working steadily and laying up a surplus, and neither of the black colonies swarmed during the season. Two of them filled the supers twice, which is somewhat remarkable for this locality, for it does not have many honey-plants, and some seasons there is little or no honey secured. The Italians would hardly enter the supers at all; some colonies absolutely refused to work in the supers, and just swarmed out as soon as the lower story was full of bees, which would be in a very short time, as they seemed to be extraordinarily prolific. I know that the season has very much to do with swarming; but it seems reasonable to believe that both would have been equally affected. Most of what I have read on the subject says that the Italians are not excessive swarmers; but for some reason these certainly were, and they were said to be of excellent stock, being highly recommended by one of the largest honey-producers in the country. I am in hopes that the past was in some manner an abnormal season, and that the next will show better results.

WHITEWOOD AS A HONEY-PLANT.

This tree is usually called tulip-tree, or whitewood, in the North; but in the South it

is almost always called "poplar." The wood is very valuable for building and a great many other purposes, and on this account the trees are becoming scarcer every year. Only a few years ago there were enormous quantities of these trees in most of the southern ranges of the Appalachian region and the foothills of the same region. Now there are only a few inaccessible places in which there are any considerable number of white-wood-trees, and these are growing scarcer year after year.

The whitewood blooms usually about the middle of May, and occasionally, when there are late frosts, the blossoms are almost all killed. This happened in the spring of 1907. There is almost always so much rain that the bees do not have a good chance to work on

whitewood blooms. The blossoms are very large, and are almost exactly like a tulip-blossom, and contain a large amount of honey. The honey is of a dark color, but of very good quality, and brings as high a price here as any kind. I could easily sell thousands of pounds of it at a good price; but there is never enough of it to supply the demand. As the whitewood blooms early it is a great help in brood-rearing, and the bees build up very rapidly where there is even a small number of trees, and are in good shape for gathering basswood honey when the trees bloom. If there had been forest reservations established a few years ago the whitewood and basswood would have been very valuable sources of honey.

Stonecoak, W. Va.

THE ALEXANDER CURE FOR FOUL BROOD.

Another Testimonial as to the Soundness of the Plan.

BY PERCY ORTON.

Dr. Miller's discovery, page 760, Dec. 15, in treating black brood, is ancient history to me, and should be to others if they had practiced what I wrote to you and was printed in GLEANINGS, April 15, 1906, page 507.

I knew how to rid combs of black brood long before Mr. E. W. Alexander reported it; but I was afraid of the State inspector, as two had been to my yard and told me to shake the bees on to new foundation and



Combination paper and wooden winter case being tried out at Medina.

melt up the combs, otherwise I should have reported before.

I have "discovered" that it is not necessary to kill, remove, or cage a queen when getting rid of black brood if you do not care to increase the number of brood-combs.

My treatment is this: Take out one half of the brood-combs in a hive, and push up the follower to within a bee-space of the other combs that are left; put on this body, half full of combs, a queen-excluding honey-board, and on top of that another hive-body. Shake every bee off the combs (that were removed) in front of the lower hive-body, allowing them to run in; then put the frames in the empty top hive-body and put on the cover. Leave them for ten days; exchange the lower combs with the upper, brushing all bees into the lower hive-body again. Leave two days as before, and at the expiration of that time put all the frames together below.

Nine times out of ten the colony will be cured if the bees are fairly strong in numbers.

If you are an extracted-honey producer it is much easier to rid the yard of black brood than if you are a comb-honey producer. The former has only to brush his bees on to extracting-frames, that have been on the hive to be treated, over a zinc five days or more, according to the time of year, and nineteen times out of twenty the colony will be cured the first time; if not, keep alternating the combs until they are. I never had to change more than twice, even in the worst cases.

I noticed at our bee-keepers' meeting held at Amsterdam that not one person ever took any stock in Mr. Alexander's cure for black brood. Any way, I never heard any one express himself favorably; *but it is a cure just the same.* The secret of it is to keep the queen away from the combs from 10 to 27 days. Some cases are different, and the worker bees will make the cure by removing the cause. Don't kill good queens. Don't shake bees on to foundation alone, as over half will swarm out.

Don't get discouraged. I have had lots of experience during the last seven years; but black brood doesn't bother me any more.

Northampton, N. Y.

[See editorial comments elsewhere. It will be noted that Mr. Orton lives in a black-brood district, or what was once that, at least, in the State of New York.—ED.]

WINTERING OUTDOORS IN WINTER PAPER CASES.

BY E. R. ROOT.

Every winter we are conducting some experiments to test various methods of wintering outdoors. Ever since the winter paper cases came up for discussion we have been using them in a small way to determine how nearly they would hold their own with the regular standard double-walled chaff-packed hives. Experiments thus far conducted seem to show that the paper cases do not give as good results as the regular standard



Paper winter case with chaff cushion placed on top.



A paper winter case showing the folds of newspaper next to the hive.

hives. While they are, of course, far better than no protection whatever, it is doubtful whether, in our locality, it pays to fuss with any thing of this sort; for the loss in bees, and the greater consumption of stores, will more than make up for the cost of better protection.

During the last year or two we have been trying a combination of wooden winter case and the paper case. The subjoined illustrations will show how some of our hives are prepared. The inner cover is sealed down by the bees. Over the hive are placed several folds of newspaper; over this a large square of heavy wrapping paper, when the sides and ends are neatly folded down and tacked. An ordinary chaff cushion is placed on top, and over the whole is put a wooden winter case that neatly fits over. In the illustrations you will notice how the entrance has been reduced, and the further fact that an Alexander feeder is left on over winter.

We do not anticipate that this combination of wood and paper case will be as economical of stores and of bees as the regulation double-walled hive. Then why do we fuss with any arrangement of this kind? Simply that we may do a little experimenting for the readers of GLEANINGS. If they have any merit at all they may be useful in milder climates than we have here.

CARPENTRY FOR BEE-KEEPERS.

Sharpening a Saw.

BY F. DUNDAS TODD.

Here is part of a letter that got me into this trouble. When I had read as far as the middle of it I thought of that joke we used to rattle off as school-children: "Of all the

saws I ever saw saw, this saw is the worst to saw I ever saw," or words to that effect.

There is one feature pertaining to carpentry regarding which a great lack of knowledge exists, and that is saw-sharpening. Can you not give us a chapter on this kind of work? The average farm-saw requires from 50 to 100 pounds weight on it to cause it to "chaw" through a soft-pine board. It is in the interest of the average boy that I want to see an article on how to file a saw.

One of my old business friends has a saying, "When the other fellow puts it up to me I always go him one better," and here it was squarely up to me. I have a perfect mania for very sharp tools, and for years I have taken care of all of them excepting the saws; and these, as soon as the keen edge was worn off, ordinarily by the boys trying to cut through a nail or two, I used to take to an expert. In a general kind of way I fancied all other users of saws did the same thing, even farmers. But I see I have been mistaken. Now that I come to think of it, I can not recall ever having seen a really sharp saw in a friend's house excepting one, and, strange to say, the owner of it was a bank official who sharpened it himself; but I can recall many blunt ones. Now that the problem was up to me I decided to learn how to sharpen a saw, even if it took a week, and included the destruction of one of Disston's best. Well, it took just one day to make me wise; and the best proof is that I have submitted to the critical examination of an old-time carpenter a rip, crosscut, and backsaw, all of which have been under my file, and he pronounces them well done; but he cautiously added, "Not perfect, remember." Being fresh from the work I feel I am in fine shape to tell how it was done, perhaps better than the expert, for he just forgets some little trifling point that means so much to the novice.

My correspondent wants especially to know how to treat a saw that has been filed out of order. Honestly, I did not expect to be able to handle this problem with credit; but my first attempt, just because of the want of information regarding a trivial point, resulted in a saw very badly filed out of order; and for the best part of two hours I worked hard on what was really a ticklish job in dentistry, for that saw needed a new set of teeth. It got them, and I am rather proud of the job.

For sharpening an ordinary handsaw one needs four tools—triangular file of tapering shape; flat file; a saw-set, and a saw-clamp; My correspondent speaks of different sizes of triangular files, evidently being of the opinion that the various sizes will give different angles, but this is not so; for, no matter what the size of the tool, if we break it straight across, the surface will be an equilateral triangle; and any one who has studied geometry knows that, in such a triangle, each angle is of the value of 60°.

The flat file is to be used for jointing—that is, making the teeth all of one height.

The set is used for bending the teeth side-wise alternately, so that the cut made by the teeth will be slightly wider than the blade, thus permitting the blade to work freely.

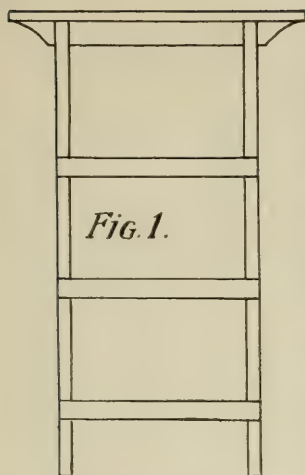


Fig. 1.

The clamp is to hold the saw in position while it is being treated, and is indispensable. I know whereof I speak, because in a fit of smartness I held the saw, on my maiden effort, in the bench-vise. I have just finished making a clamp like one I borrowed, every bit of the sawing being done with tools of

my own sharpening, which worked cleanly and smoothly; so before the reader does any thing else he must make a saw-clamp. Fig. 1 shows the front elevation.

The classifications are: uprights, 2 pieces, $2 \times 4 \times 50$; cross-pieces, 3 pieces, $1 \times 4 \times 21$; vise, 2 pieces, $\frac{3}{4} \times 2 \frac{3}{4} \times 30$.

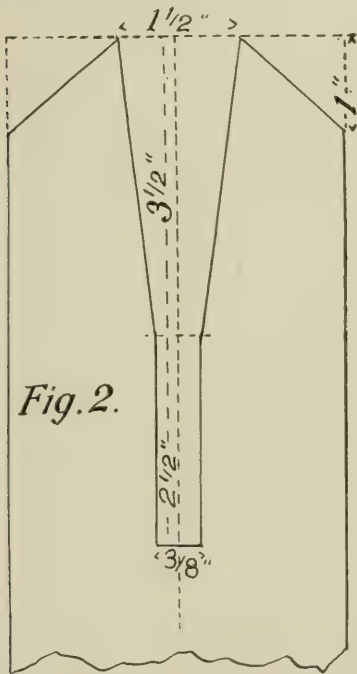


Fig. 2.

The lengths of the uprights will depend upon the height of the man who is to use the clamp. I find in my own case it is about six inches shorter than the distance of my armpit from the ground.

Begin work on two 2×4 stuff by drawing on the face at one end of each piece the design shown in Fig. 2; then saw out the

center piece and cut off the corners; then nail on the three cross-pieces. The two pieces that form the vise are to be held in the V-shaped cut, and must, therefore, be planed to a suitable shape.

Fig. 3 shows the pair in cross-section with exaggerated space between. To lay out the work on one face of each piece, draw a line $\frac{3}{4}$ inch from an edge; then on the opposite edge draw a line right down the middle. Plane the marked face until the new surface is bounded by the pencil lines; then plane the other edge until a new surface extends from the pencil-line to the margin of the unmarked face.

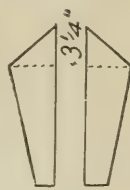


Fig. 3.

Last of all, sufficient from the ends of each piece must be cut away to give room for the handle of the saw. Fig. 4 illustrates this.

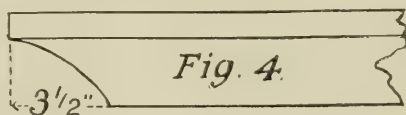


Fig. 4.

When you use the clamp it is better to be out of doors, because you will need lots of good light. There is no chance work in filing a saw; you must know exactly the shape of tooth you want, and see that you get it; so, set your clamp up against a fence and rope it tight to the railing so that it can not move.

SAWS AND THEIR TEETH.

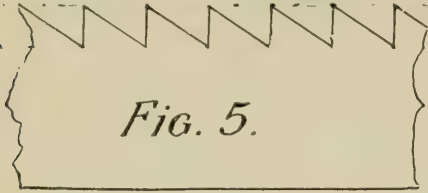
The use to which a saw is to be put determines the shape of its teeth; consequently, for the proper sharpening of any particular saw one must know to what purpose it is to be put. This article is not intended to cover the whole field of saw-sharpening, but only such phases of it as may come within the scope of the average bee-keeper or farmer. The essential saws for such a one are cross-cut, rip, and back saws, for soft or medium hard woods, and buck-saw for the firewood pile; hence only these will be considered here.

The rip saw is used to cut in the direction of the wood; the other three, across the grain.

A saw-tooth has two functions—paring and scraping. The rip saw acts like a chisel, each tooth cutting out a piece of the fiber, which lodges in the throat of the tooth and is carried forward until free of the wood, when it falls to the ground. Since one tooth alone is responsible for each bit of fiber, both sides of each tooth must be equally sharp; in other words, the forward face must be at right angles to the body.

So much for the paring action of the tooth. Let us now consider its duty as a scraper. Scraping is done with a sharp tool held at right angles to the surface that is being operated upon. The bottom of the groove in which the saw runs is the surface that is be-

ing scraped, and this surface coincides with the line formed by the teeth of the saw; therefore, to get the teeth perpendicular to the surface of the bottom of the cut we make them perpendicular to the general



line formed by the points of the teeth. Fig. 5 illustrates the teeth of a four-point rip saw, such as is used for soft woods. The angle which the front of the tooth makes with the general line is called rake, hook, or pitch. In this case it is perpendicular.

Right here it may be as well to explain that saws are classified by the number of "points" of teeth that come within the compass of one inch. The number of teeth is one less than the number of points. In most saws the number of points is stamped on the blade below the handle. For medium-hard woods a five-point rip saw is best, the teeth being dressed like the four-point.

CROSSCUT SAWS.

In cutting across the grain the fiber can not be wedged out as in ripping. It must be severed on each side as if by a knife-cut, so we see it takes two teeth to cut out each little bit of wood fiber that comes away. The front or cutting edge of each tooth must, therefore, be brought to a sharp edge like a knife—with this difference, however, that the bevel must be on only one side of the tooth—the inside. Again, we all know that it is very difficult to cut a piece of wood with even a sharp knife when the blade is kept at right angles to the direction of the stroke.

However, if we advance either the point or the handle ahead of the rest of the blade, cutting is much easier. For this reason the pitch of the tooth of a crosscut saw is generally about 60°. The only exception a farmer or bee-keeper is likely to meet with is the pruning-saw, where the pitch is usually almost perpendicular, like a rip saw; but the edge is beveled like a crosscut saw. The upright pitch is permissible because of the soft green wood it is used upon. A six-point crosscut saw is the best to use on soft wood where rapid rather than fine work is required. For medium hard wood a seven-point saw is better, while a general-purpose bucksaw has four points. Experts make a slight difference in the amount of bevel that is given the teeth of different crosscut saws; but for general use they may be all sharpened the same way.

Before dismissing this general subject of teeth it will be well to point out that, since both edges of each tooth are beveled, when we look sidewise at the tooth of a

crosscut saw we see a little one inside of a big one. The upper corners are joined by a straight line; therefore when we turn the point of the saw toward us so as to get a profile view of a tooth we find it looks like Fig. 7, and two adjacent ones appear like Fig. 8. In a well-sharpened saw this groove should show all the way down when one sights along the edge toward the light. The more perfect you can make this groove the nearer you approach perfection in sharpening.

JOINTING THE SAW.

The first step in sharpening a saw is to joint it; that is, bring all the teeth to a uniform height. This is very important, for if one tooth be just a little above the general level, the saw will stop with a jerk right at that point. To test this, lay a bit of flat wood on the saw-bench and run a gentle stroke across the edge. When the saw suddenly stops, mark the spot and you will almost certainly find a high tooth right there.

I will suppose your saw firmly held in the clamp, the grip being tightened by hammering the vise firmly. Take a ten-inch sharp flat file without a handle; lay it on the teeth with the point toward the point of the saw and pass it along the teeth, repeating until all are of a uniform height. In a bad case of uneven teeth you may have to make quite a vigorous application.

SETTING THE TEETH.

As already said, setting consists of bending the teeth alternately from side to side. The flat side of the tooth is bent outward. The amount of set is determined by the size of the tooth and the nature of the job. Soft woods need more set than hard woods; wet woods more than dry. But use no more set than is actually necessary; for the more set, the more wood is cut; therefore more force must be applied. But whatever be the set it must be uniform throughout; but, luckily, this is easily got by the adjustable sets on the market. Using a Tainter's saw-set I find excellent results when the anvil is turned to No. 2 for the back saw, No. 4 for the seven-point hand saw, and No. 5 for the rip saw. All the set should be in one-half of the tooth, and should never reach to the body of the blade. In setting, begin at the handle on one side and finish that side before tackling the other.

FILING.

With a saw in fair condition the safest rule to follow is to put a new surface at exactly the same angle it had before. Push the file with a slow and steady stroke so as to use the whole length of it, always keeping the downward pressure uniform throughout the whole stroke so that the action on the tooth will be uniform from top to bottom of the tooth. On the return stroke, either lift the file clear or allow it to rest very lightly on the saw. Two strokes are usually sufficient for such a tooth as one finds in a six-point saw, while only one is usually enough



on the small tooth of a back saw; and, speaking of files, do start with a new one, keeping it clean and well oiled.

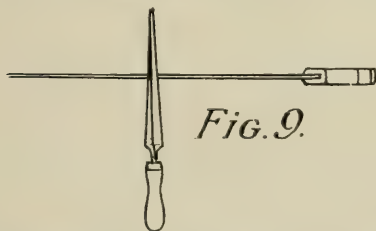
But suppose you are starting out to work on a saw that is badly out of order, such as my correspondent described—one that has been filed all kinds of ways, and set without any system; then you will have a job on your hands that will keep you busy for quite a while. First, see that your saw is so set in the vise that the lower part of the finished tooth will be very little above the level of the vise top—only enough for the vise to clear it, and you will then have a guide for the depth of the cut. Theoretically you are to work upon only one tooth at a time, but I find my file is busy with one on each side. Which will be filed the more will depend upon how the pressure is applied; and this gives one a chance to correct an uneven width of teeth; so when you apply the file to any particular tooth, compare it with the one on the other side of the file, and press hardest against the wider one, letting the other take care of itself. You will thus be able to get uniform width in the teeth of the saw.

THE TOOTH TO WORK ON.

Start work on one side at the end nearest the handle, and file each alternate tooth; then reverse the saw and file the remainder. You will probably be in doubt as to which tooth you are to work upon. I know I was. It is the one that is bent away from you, the one in which you can see the little tooth inside the big one; and you are to work on the face next to the point of the saw. So when the handle of the saw is on your right, the tooth you are to file will also be on the right of the tool; when the handle is on your left, the tooth will be on the left of the file.

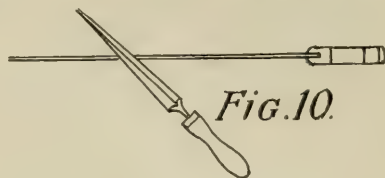
ANGLE OF FILE.

The angle at which the file is held is important. We have two to consider—first, the angle with the perpendicular face of the blade; second, the angle with the line of the teeth. The first is always at right angles; so if the clamp is standing perfectly upright, then the file will be horizontal. The second angle is determined by the amount of bevel wanted on the teeth. In the case of a rip saw, where a square-pointed tooth is wanted



the file will be at right angles to the length of the blade. In Fig. 9 we are supposed to be looking down upon the teeth of a rip saw from above, and we see the file working at right angles to the line of the teeth. In crosscut saws, such as have been described, an angle of 45° is about right.

Fig. 10 shows the angle when we look from above. The cant of the file will depend upon the rake you want to give the tooth. With crosscut saws the top face of



the file should be level in both directions; with the rip and pruning saws the face of the file working on the front surface of the tooth must be upright.

In working over an old saw that is in bad shape, bend all your thoughts in getting uniform depth of cut, width of teeth, and angle of bevel. Do not worry at this stage about the height of teeth or the angle of slope shown in Fig. 7; for if the other three are right, these two will probably take care of themselves, provided always the file is kept level and at the proper angle with the line of the teeth.

An old proverb says that an old violin is good enough for a beginner to practice on. Of course it is; for it is a better instrument than it was when first made. But an old bent saw with twisted teeth, sometimes wanting a few of these essentials, is not the best tool for first experiments in saw-sharpening. The possessor of a good saw with many broken teeth should send it to a saw-cutter who will strip off the old teeth and punch new ones in the new edge.

Let me conclude by giving the dimensions of saws that are recommended for such work as happens around the average apiary or farm:

	Length	Points to inch
Rip saw	28	4
Hand or crosscut	26	7
Tenon or back	10 to 14	10
Keyhole or compass saw	14 to 18	9 to 12

Victoria, B. C.

A STRUGGLE WITH EUROPEAN FOUL BROOD.

The Removal of the Queen and the Introduction of a New Italian Queen Effected a Cure; Goldens Preferred to Three-banded; the Alexander Method Followed.

BY EDGAR WILLIAMS.

I should like to give you my experience with European foul brood or the so-called black brood. The winter of 1903 proved to be a very severe one on bees in this locality. Most bee-keepers lost from 75 to 100 per cent of their bees during the winter and spring. My bees were wintered out of doors in single-walled hives packed only on top. I saved only four weaklings out of eighty good colonies the previous fall. Whether this had any thing to do with the disease I can not say—probably not. I am simply telling it as

a prelude to my story. I purchased three more colonies that spring, and moved them the fore part of June. They were perfectly healthy, as were the four I had wintered. The raspberry commenced to bloom, and it was followed by white clover, so that my seven weak colonies built up rapidly.

About the first of July I decided to begin preparations for increasing my apiary. I moved one colony to a new location and placed a set of combs on the old stand for the old queen. If the old colony had plenty of young bees left I intended to let it rear its own cells. On looking at the old brood a day afterward I was somewhat surprised to find that nearly all the bees had deserted it. I took away most of the sealed brood and gave it to other colonies for fear it would chill, massing the frames left containing partly unsealed brood in the center of the hive. It was now not much better than a nucleus. About ten days later I made an examination. The sealed brood had mostly hatched, but that which was unsealed had died and lay untouched in the cells. Half of it had turned to a dark-brown mass. I thought it was chilled brood, and it *might* have been, for the colony was perfectly healthy. When I divided it I gave the frames to several of the other colonies. The honey-flow continued a while longer—about ten days—and the dead brood practically disappeared. After the flow had ceased I noticed a large quantity of dead brood in several hives. I began to think something was wrong. Several in the neighborhood who kept bees were consulted. They had never noticed any such thing except an occasional cell, therefore they were inclined to think it was poisoned or starved brood, so I did nothing. Being anxious for increase that year I formed nuclei, raised queens, and then strengthened the nuclei by drawing brood from the stronger colonies. The seven colonies were increased that year to thirty, all of which were inoculated with disease.

GOOD PROSPECTS FOR 1905.

The bees wintered well, as I lost only three colonies out of thirty. The first batch of brood the bees reared appeared to be healthy, and I thought the disease had disappeared. This is something I have often noticed with the disease. The first lot of brood raised in the spring is, to all appearance, healthy. It is the second lot, or after that, when the disease begins to appear. But soon I noticed it in a few colonies, and by the latter part of May every colony but two was badly diseased. Some showed very few healthy cells. In some cases it seemed to affect the bees. Some colonies that had prepared to swarm, in a few weeks had scarcely enough bees to cover the brood. These, of course, were exceptional cases. Two colonies remained healthy. One was a hybrid; the other colonies left showed three yellow bands, although at that time I had introduced no new blood. The rest were all hybrids.

I sent a sample of the brood to the A. I. Root Co. They pronounced it pickled brood, or possibly foul brood, and advised me to

give the bees the McEvoy treatment. I decided to follow their advice and do a thorough job. So on the first day of June, 1905, I shook all the thirty colonies, except the two healthy ones, on frames with starters. As I had no tight building to handle the combs in I carried the whole 28 set through our dining-room, up a flight of stairs, through a hall, into an attic. As luck would have it, mother did not notice the honey and bits of comb that got on to the stair carpet until the combs were all in the attic. Shaking the bees and carrying the combs into the attic occupied a whole day, and a hard day's work it was.

That evening I went to work extracting the honey out of the combs. Part of it was candied and would not come out. I worked past midnight, took a "lay off" next day, and worked past midnight the next night before I got the stuff extracted.

Next morning I built a fire under the big iron kettle, went up into the attic, cut the combs from the frames, put them in sacks, and carried them down and put them into the kettle to render into wax. I had just completed stacking the combs, and had part of them in the kettle. The wax was about ready to boil over when mother came to the door and informed me that the attic was full of smoke—the house must be on fire. I hurried into the house and up into the attic, distinctly remembering that, the *day before*, I had had the smoker up there driving some bees out of doors that had clustered on the windows.

Pierpont, Ohio.

To be continued.

THE VARIATION IN ORANGE HONEY.

BY EDWIN G. BALDWIN.

My dear Mr. Root:—You will note in the article by Mr. H. F. Hart, of Alabama, page 738, Dec. 1, that he names titi and black tupelo, sweet gum, gallberry, and loquat as possible sources of contamination with the pure orange nectar. I am much obliged to him for his kindness in calling my attention to what he believes are possible sources; but locality has so much effect, he naturally supposed that, because we live in Florida, we have all the trees, shrubs, etc., that are to be found anywhere in the State, and have them right here in range of our bees at Deland.

As a matter of fact and interest, the titi and black tupelo do not extend further south than the northern end of Lake George, northern end of our county, sixty or more miles from us. That is the southern limit of their growth. The loquat is here in fairly large numbers; but it is now in bloom, and will be till early January. It is in fruit, not blossom, by the time oranges come into blossom, and can not possibly be a source of any of the honey in the supers at orange-blooming time unless it be carried up by the bees later in giving the queen room, as stated in my article on orange honey in your columns.

The gallberry (our holly) blooms, by actual tabulation, from the 23d of April (the earliest noted) to the 11th of May, the average being the 5th of May or thereabout. It is too late to come into our orange crop, as we extract as soon as the last orange-blossoms are gone. That leaves but the sweet gum in the list named by Mr. Hart. If our bees worked on it here it would be a source, I admit. But I have never, in all my observations, seen any bees on sweet gum in our section. Whether it does not yield honey, and whether climate and soil can be accountable, are questions I have not yet been able to determine. I have sent another sample of this year's orange-blossom honey to Mr. Younge, of Washington, and await his verdict on the pollen-grains with deep interest. By the way, I sent him a sample of California orange honey (so called), and was not surprised to hear that there were no clear-cut grains of orange-blossom pollen in it, for I had already made up my mind that it had very little if any of the real orange. It did not have the taste nor color nor odor; and the pollen grains only confirmed the other attributes. As I wrote Mr. Hornor, of Jenkintown, it is probable that much light-colored well-flavored honey from California is sold under the name of "orange honey" for the sake of the suggestiveness of the term, just as much tupelo honey from Florida is sold by that name in New York and other cities, as I happen to know from talking with large dealers there; at least this was so before the passage of the pure-food act. How it may be now, I do not know; but this sample of honey from California was surely masquerading under the title of a honey that it did not deserve. Large shippers of East Coast oranges from Florida tell me that much fruit from that section is sold as "Indian River Oranges" just because that particular region happens to produce the finest fruit grown. May it not be so with some of the honeys from California? If so, ought not the pure-food act to have a word to say in the matter?

Deland, Fla.

SWEET CLOVER.

Profit in Growing, Sowing, and Cultivating it, and How to Make it a Most Valuable Crop.

BY R. L. SNODGRASS.

To produce the first crop of sweet clover, sow 20 lbs. of the seed per acre any time between Dec. 1 and Feb. 1, as the seed always germinates best if it freezes a few times in the ground. About the first of September it is well to turn stock on the clover, and pasture it until the first of December, as it will keep green until this time, and even later.

The following spring one may pasture it for two or three weeks; and if it is not grazed too long it will give a good crop of

bloom and seed; if it is pastured too long it will not grow so tall, and the blooming and seed crop may be cut a little short.

As soon as the seed crop is cut, plow the ground and sow to buckwheat or millet; and as soon as either of these is harvested the ground is in fine condition to disc to wheat. I do not consider it advisable to sow more than half a bushel to three pecks of wheat per acre if a good stand of sweet clover is desired the following spring, as too heavy seeding of wheat tends to smother out the clover. If the wheat is not too thick the sweet clover will come up in the wheat from the seed, and the following year another good bloom and seed crop can be produced. One can again go through the same routine as before. I have the best stand of sweet clover that I ever had, that I managed in just this way.

It always pays to plow up a field after a seed crop has been cut, for a good stand is never secured after a seed crop has matured, as the old plants smother out the young ones. Hence I recommend plowing it up; in fact, the clover does better if a field is plowed up every two years.

Any one managing a field in the way I have described can well afford to pay \$5.00 per acre, cash rent.

There is no other clover that is such a soil-renovater as sweet clover. I have been pasturing my clover ever since one month after I cut the wheat. When I turned my cows on it they doubled the flow of milk, and it is still green as it can be at this writing, Dec. 5, and my cows are still grazing on it—the white clover. I have also a fifteen-acre field of the yellow variety on rented ground that is about one foot high, and just as green as in mid-summer. I haven't turned the stock on this yet, but expect to do so soon. I prefer the yellow variety to the white, as it is an earlier bloomer and makes more pasture, as it will stand closer grazing. The hay is also much finer, and cures more quickly, and therefore is ready to stack much sooner than the white; and I believe, too, that the stock eat it more readily.

Now, the most important feature of it all is that it is an earlier bloomer by two or three weeks than the white or alfalfa either, and consequently it puts the bees in good condition for the alfalfa honey-flow; and if the first crop of alfalfa fails to bloom, as is usual in Kansas, the yellow sweet clover lasts until the second crop of alfalfa is in full bloom. I had 100 colonies last season that had only eight or ten acres of the yellow variety to work on, and my colony on scales gained about 2 lbs. per day for 30 days, on the yellow variety of sweet clover, between the first and second blooming of alfalfa. Now, if this will not put all colonies in shape for the second blooming of alfalfa I don't know what will unless it is heavy feeding, and that is rather expensive and not so easy. And in addition to the benefit my bees and stock derived from it I secured about 2000 lbs. of cleaned hulled seed.

Augusta, Kan.

COMMERCIAL QUEEN-REARING.

Are Not Some of the Modern Methods to Blame for so Many Poor Queens Sent out by Queen-breeders?

BY J. L. BYER.

As I have never reared a single queen by the artificial methods now in vogue it may look like sheer presumption to make any comments on the subject of commercial queen-rearing. However, though I have not reared any queens I have nevertheless bought a good many; so, by way of apology for my statements, I will talk from the standpoint of the consumer rather than from that of the producer, in so far as the trade in queen bees is concerned. At the Ontario convention, held in Toronto last November, much time was taken up in discussing this very important phase of the industry, and the members had the pleasure of having two of our commercial queen-rearers present, and of listening to each of them as he gave a practical and lucid address.

In the discussion that followed these addresses, many of the members commented on the great difference in the queens received at different times, even from the same breeders. While it was generally admitted that there is always considerable variation in queens reared by the ordinary methods, yet the idea seemed prevalent that the variation is much more pronounced in queens reared under the new commercial methods.

J. W. George, page 763, tells of the double-grafting method used by some apiarists in California to ensure the generous feeding of the queen larvæ; and the question arises as to whether queens reared by modern methods are not apt to be neglected in this line. If that is the case, it seems reasonable to believe that poorly fed larvæ might account for a lot of the poor queens that are undoubtedly sent out by queen-breeders. This point was brought out in the convention, and I mentioned the fact that, in my experience, the great majority of queens reared under the swarming impulse certainly do not suffer in this respect, as nearly all cells have a surplus of royal jelly left in the base after the queen has emerged. Whether this is the case with pure Italians or not I can not say, as I do not remember having had more than two swarms from this race of bees. The reasons for this are that I use large hives, and nearly all our bees have Carniolan blood.

From a recent experience I have had, I feel convinced that sometimes *something* out of the ordinary occurs at times, even with the best queen-breeders, with the result that a whole batch of poor queens is sent out at the same time. For a number of years I have bought queens from a man who has an international reputation, and nearly always these queens have turned out well—so well, in fact, that I have repeatedly recommended these queens when out on inspection work. To make a long story short, in July, 1908, I

received quite a large bunch of queens from this breeder, for my own yards and for a yard belonging to a bee-keeping friend. All wintered well, and this spring appeared to be in ordinary condition as compared with the rest of the bees in the same apiaries. As to actual results, strange to relate, there was not a single queen in all the number received by either of us that was worth much more than the cage she came in. This is, of course, comparatively speaking, as some of the colonies with these queens did store as much as 50 lbs. of honey in apiaries where the general average was around 150 lbs.

Now, while I am not going to say that this batch of queens had been partly starved while in the larval stage, yet conditions at the time of their rearing were wrong in some way, else why should the whole lot have turned out so worthless when, as a rule, queens received previously had given a good account of themselves.

I leave the problem to be solved by those who are in the business—particularly to the one most interested. In this case I deemed it my duty to tell the queen-breeder how his last lot of queens had turned out, and his letter in reply says that he can not understand it unless it was caused by the drouth. Presumably he refers to the drouth of this past season; but as to why it so affected his queens, and not others in the same yard, is not explained. I frankly confess that the answer received from him did not tickle my vanity any, as I decided that he must have a very poor opinion of our judgment in the matter to advance such a reason.

DOES EUROPEAN FOUL BROOD VARY IN VIRULENCE IN DIFFERENT LOCALITIES? GOLD-EN BEES MORE IMMUNE.

Dr. Miller's account of his dealings with black brood will be read with interest by many here in Ontario at the present time, as we have in our province an outbreak of this disease. From my experience with this plague I can not but believe that the disease varies greatly in its virulence, and what we have here in Ontario is much worse than the brand at present around Marengo, Ill.

Certain it is that the Alexander system of treating the disease is worse than useless here, as it simply takes up valuable time and gives no good results. Even after the most thorough purging, it will reoccur in a great many colonies; and at present Mr. Warrington Scott, the inspector in the infected district, believes that only by thoroughly Italianizing all stocks is there any chance of getting rid of the pest. More than that, he will not stop with the ordinary Italians, but insists now on the goldens as being the only ones likely to keep immune from the disease. Mr. Scott is one of our most thorough apiarists, and has lost thousands of dollars from black brood, so his opinions are worth taking into consideration. Personally we have been rather prejudiced against the very yellow bees on account of their poor wintering qualities, especially when left outdoors; but if they are immune to black brood, that cer-

tainly will hide a multitude of sins, especially in sections where the disease is already established.

IS HONEY-DEW AN EXCRETION?

I for one shall be more than pleased if D. M. Macdonald's view, page 763, Dec. 15, is established as to honey-dew not being an excretion. I hope he is right, so much that I almost believe already that his view will be substantiated. The subject of honey-dew has, with my present knowledge on the matter, always been the *one* subject that I did not want to explain to the prospective beekeeper, and especially so to the buyers of our honey. As the editor pertinently remarks, entirely too much has been said on the excretion phase of the question, which, after all, now seems to be a debatable question; and in the light of friend Macdonald's opinions it may prove to be a libel on the honey industry.

Mount Joy, Ont., Can.

[There is no denying the fact that different batches of queens will vary somewhat, according to the season. Any queen-breeder of experience knows that it is much more difficult to rear good queens during a drouth than during a honey-flow. Practically all of our best breeders have found it absolutely necessary, during a dearth, to feed copiously those colonies that are rearing cells. Some even go further and make the cell-builders queenless, broodless, and combless for a few hours, feed copiously, and then give them one comb with a bar of grafted cells. No matter how severe the drouth, such bees will build as fine cells, and supply them as copiously with royal jelly, as bees directly under the swarming impulse.]

But it sometimes happens that a queen-breeder who has been depending upon the natural honey-flow gets caught. Before he knows it the supply of nectar has suddenly stopped. Unless he is able to take a "stitch in time" by feeding the cell-building colonies, the queens from those cells will be of low standard. While we do not know that this was so in the case of the queen-breeder mentioned, it might have been.

Regarding European foul brood, we doubt very much whether there was any difference in its virulence in different localities; but we do know that a difference in the strain of the bees does have a marked influence in the matter of cure. It is possible that, in some localities, there is more of the Italian blood than in others. It is possible, also, that there is a strain of blacks, with just enough of Italian blood, that will resist the plague as much as or more than the Italians. Dr. Miller uses hybrids very largely. It will be remembered that he has been working for years to produce an extra energetic strain of bees without regard to markings. That he has to a great extent been successful is borne out by the fact that he has secured high averages per colony. This was especially true in 1908. Now, it is possible that the Dr. Miller strain of hybrid hustlers also have a great resisting power against Euro-

pean foul brood—as much as or more, perhaps, than some of the good strains of Italians.

Whatever the merits of the Alexander treatment, or the treatment as modified by Dr. Miller, it would seem to us that it would be wise to combine the McEvoy and the dequeening process of Alexander and Miller. Speaking about Mr. McEvoy, it will be noted that, in the editorial department elsewhere, he says Dr. Miller's experience in the matter of treating European foul brood is quite in line with his own. Mr. Percy Orton, of New York State, who appears to have had a large experience, claims that he has known all along that the Alexander method of treatment, even before Alexander gave it to the public, was effective.

We shall be glad to get reports from others who are able to offer testimony on the effectiveness of the Alexander plan of curing black brood. We are not seeking favorable reports only; we want the *unfavorable* as well. Mr. Orton feels that European foul brood is easily handled, and it certainly is if the Alexander-Miller form of treatment or the one used by Mr. Orton is effective.—ED.]

SOME OBSERVATIONS ON THE HABITS OF THE HONEY-BEE.

Bees Gathering Wax.

BY WM. M. WHITNEY.

Mr. Editor:—Dr. Miller, in *Stray Straws*, July 1, refers to bees being seen loading their pollen-baskets with wax which they found outside the hive. It has been a common observation in my yard, when bits of comb outside have sufficiently softened by the sun to be worked; also, later in the season, I've been very much amused watching the bees gathering propolis left where the sun's rays had softened it. I have many a time seen them filling their baskets with it, glistening in the sunlight like little brown beads. My entire time for thirteen years and more has been spent in carefully watching the bees.

HOW TO TELL FROM THE OUTSIDE WHETHER A COLONY IS PREPARING TO SWARM.

The question is sometimes asked if it is possible to tell from the outside appearance of a hive whether there are indications of swarming before it actually occurs. This question, I think, was asked at one of the meetings of the Chicago and Northwestern Association, and it was generally conceded that there was no way to tell. Notwithstanding all this, I believe there are outward signs of swarming; but it requires careful watching to discover them. There is a marked difference in the appearance of young bees out at play, as it is termed—marking their location—from that of old ones apparently doing the same thing. When one sees *old* bees during the swarming season come out and fly before the hive like young bees at play (excepting at a time when they have

been kept in by a spell of bad weather, at which time they are simply marking their locality anew) and settle down, then come out again in the same way, you may conclude that, in a very short time, a swarm will emerge—often within a few minutes; but sometimes an hour or two may elapse unless a sudden change of the weather occurs to prevent, which, of course, will delay it till favorable weather. At the yard at Barrington a few days ago two colonies which I had predicted, from outward indications, were liable to swarm, came out in a drizzling rain, and we hived them while it was raining. This act of flying in front of the hive is often repeated several times; and when it occurs in quick succession, put your ear to the hive and you will be likely to hear an unnatural uproar all through the hive, which immediately precedes the grand rush.

MEMORY OF PLACE IN BEES.

I was very much interested in articles under head of "Are Bees Reflex Machines?" and especially in that of July 1, "Memory of Place in Bees." Observation and experience in the bee-yard have taught me many things which have a direct bearing upon the matter of orientation; hence the special interest in the subject under discussion. It is a well-known fact that, when bees swarm, if the queen does not follow they ordinarily return to the parent hive, or, in other words, to the old stand; yet it is easy to deceive them, if the parent hive is the end one in a row, by putting an empty hive at the end beside it, into which they will go, although their own hive stands not a foot away. Their memory recognizes the end hive as theirs. So it is with bees returning from the field to an end hive in a row. If another is placed at the end beside it they will persistently try to enter the end one. An experiment of this kind was made less than three weeks ago at a yard where a young apiarist was being instructed in the management of bees. They were flying freely, and in less than five minutes the front of the hive and alighting-board was covered with bees trying to enter the wrong hive, while theirs was not 18 inches away. Again, who has not tried the experiment with bees that have had the habit of using one end of the entrance to the hive of forcing them to use the other end, and watched their persistency in trying to enter at the old place? All this seems to be the result of memory purely. Practical bee-keepers, however, have learned that, by confining them for a short time, say three days, they forget their past location—hence the ability to do many things in the manipulation of the hive which otherwise might be impossible to accomplish.

I am convinced, from watching bees in my own yard, that where hives are put in rows, and near each other, and where there are no trees, shrubs, or other landmarks to mark location, there is much more mixing than is generally supposed—especially if bees are of the same strain, and more particularly with young bees that have not clearly marked their location, and that many valuable

young queens are lost in this way. I say of *the same strain*; for my bees, being Italians, no black bee would be permitted on the alighting-board for a minute. The same is true of feeding outside. It has been a common thing for me to feed outside; and the Italians mingle together without the least trouble; but let a black bee from a neighbor's yard alight among them and he, she, or it is pounced upon instantly.

CAUCASIANS REAR MORE DRONES BECAUSE THE ORDINARY WORKER-CELLS ARE TOO LARGE FOR THEM.

In the June 1st issue you refer to Caucasians as great drone-producers, which seems to be a common complaint. I have had some experience with them; and while I can not say that I am an ardent admirer, yet I think we ought to "give the Devil his due," or, in other words, these bees. You know they are smaller than the ordinary bees we are accustomed to, and, as a matter of course, use smaller worker-cells for brood rearing; and when you force them on to foundation with but slightly if any smaller cells than their drone-cells, it is most natural that they should produce a large number of drones. Either give them proper foundation or let them build their own comb without interference, for then you are in a situation to judge them in this particular.

Evanston, Ill., July 15.

[The publication of that very interesting series of articles entitled "Are Bees Reflex Machines?" by Dr. von Buttel-Reepen, did not evoke the discussion that was expected. We consider this one of the most valuable contributions on practical apiculture that has ever been given; possibly the title itself led the average reader to believe that the series related to some abstruse scientific observations that were beyond the comprehension of the ordinary lay mind. This was far from the fact. The discussions are easily within the grasp of any one, and now that we have the work in book form many of our readers would do well to read it consecutively. Buttel-Reepen explains many of the phenomena that occur in the bee-yard; and these explanations will show the producer how to make more dollars out of his bees, for, understanding their nature, he is better fitted to make them serve him. Mr. Whitney, Dr. Miller, and a few others seemed to appreciate it at its real value.]

Regarding the Caucasians, we doubt very much whether they are any smaller than ordinary Italians. At one time the statement was made that the Carniolans were larger. Looks are deceiving. As a matter of fact, the three races appear to pass the zinc excluders with equal facility. We doubt, therefore, if our correspondent is right in concluding that Caucasians would build more drone comb because combs from worker foundation are too large. If we understand correctly, Caucasians in their natural habitat, on their own virgin combs, run excessively to drones—much more so than Italians. —Ed.]

A NEW SOURCE OF HONEY-DEW.

A Scale Insect Is Discovered in Massachusetts which Secretes a Considerable Quantity.

BY DR. BURTON N. GATES,
Bureau of Entomology, Washington, D. C.

[These observations were written for the *Journal of Economic Entomology*, Vol. II., Dec., 1909, No. 6, pages 466, 467. In order to bring them before the bee-keepers, a paper has been prepared for GLEANINGS.—B. N. G.]

It is generally known that honey-dew is secreted, not alone by plant-lice or aphids, but by some scale insects, leaf-hoppers, etc. For instance, *Lecanium oleae*,* a scale upon the citrus fruits of California, produce great quantities of honey-dew which collects as a coating upon the leaves of the trees, and is a medium for the growth of a fungus, *Capnodium sp.* The mycelium of this fungus is sometimes so luxuriant as to form a felt over its leaf, closing the stoma and thus killing the tree.

A source of considerable honey-dew, other than from plant-lice, was discovered by the author at Amherst, Massachusetts, in May and June, 1908. Large numbers of bees were observed humming through the spruce-trees on the campus of the Massachusetts Agricultural College. At times the roar was suggestive of a swarm. Closer examination also suggested that the bees were gathering propolis materials from the resinous exudations of the spruces. None, however, were seen with a burden packed upon their legs, as is the case when collecting propolis.

By following single bees it was possible to see them alight on twigs near the union of the last two years' growths, and search with outstretched tongues for something apparently sweet. At the bases of what appeared to be the dormant buds on the twigs, the bees found their sweets and set to work as vigorously as at drops of nectar. Upon crushing this bud-resembling structure they were found to be made up of animal tissue instead of plant tissue. They proved to be living insects—scale insects. There were thousands of them on the spruces from which the bees were collecting liberal stores of honey-dew. Some scales apparently produced more of the substance than others, because frequently dried crystals or globules of honey-dew were noticed at the base of the insects.

Specimens of the insects were sent to Mr. J. G. Sanders, of the Bureau of Entomology, who determined the scale to be *Physokermes piceae* Schr., "A European species which affects the spruces and only recently has been introduced into the United States." In Massachusetts it has been collected in at least three localities. The species is not likely to become a serious pest to the spruces, Mr. Sanders wrote, because of its numerous parasites; consequently, kee-keepers will

probably not be greatly annoyed with the honey-dew which it produces, as compared, for instance, with the enormous quantities from plant-lice.

Washington, D. C.

DO BEES STEAL EGGS?

Some Proof to Show that Eggs were Carried from Another Hive and Used for Starting Cells.

BY M. T. PRITCHARD.

On p. 781, Dec. 15, the editor asks for definite facts regarding the stealing of eggs by queenless bees with which to raise themselves a queen. In the early part of the season of 1906 we had trouble with our queenless colonies used for grafting. Nearly every day we found cells started with either eggs or young larvæ in them, resulting in the bees refusing to accept the grafted cell given to them. This we could not account for, as these colonies are not used to graft into until five or six days after they are made queenless. Occasionally one of these cells would be overlooked and a virgin hatch, each of which proved to be a *black* virgin.

All colonies in the yard were Italians with tested Italian queens except one. This was a fine imported Carniolan queen kept in a very weak colony to prevent her from rearing any drones; consequently we concluded that the queenless bees were stealing eggs from the Carniolan colony; and to test it we saved several of these cells and hatched them, and found that each one produced a typical Carniolan virgin. We then removed the Carniolan colony from the yard, and had very little trouble with natural cells from that time.

Our theory is that the Carniolan colony being light, or from some other reason, did not defend its entrance as well as the other colonies, and the queenless bees found it an easy place to steal eggs.

Medina, O., Dec. 27.

[Mr. Pritchard is the man in charge of our north yard, the one who, in fact, raised nearly 3000 queens, with the help of a boy, in a space of about four months. If robber bees can steal honey from other hives, we see no reason why a dire need of eggs should not impel bees to get the eggs from some other colony. It is altogether improbable that they would attempt to steal them from a strong colony, but, rather, find some weak nucleus, just as they did in this case. The fact that the eggs in the pure Italian colony developed into *black* queens seems almost absolute proof that the eggs in question were stolen from this Carniolan colony, and carried to this Italian colony and placed in the cells. It only illustrates how nature will sometimes take extraordinary means to prevent extinction of the individuals, or, in this case, a colony of bees.—ED.]

* Kellogg, Vernol L., 1905, *American Insects*. New York: Henry Holt & Co; viii—674 pp. See page 187.

HEADS OF GRAIN FROM DIFFERENT FIELDS

SPACING DANZENBAKER FRAMES WIDER FOR EXTRACTING.

I was much interested in the question asked by Mr. Richard Hanlon, page 785, Dec. 15, and your answer to the same on the next page. I have reference to the one about spacing Danzenbaker frames for the purpose of producing extracted honey. This question is, I think, a very pertinent one to us bee-keepers who are using the Danzenbaker hive. Thus far I have never produced any extracted honey; but as I see my apiary increasing, and learn through reading the journals that extracted honey is easier to produce, that bees swarm much less—or, rather, swarming is easier controlled—and that it is as profitable withal, it brings forward very forcibly this question of extra spacing in the supers. The writer has spent many of his spare moments in trying to devise ways and means to that end. I should like to ask why The A. I. Root Co. could not, by making a slight change in the metal spacers used in spacing the Hoffman frames, give us a spacer that would be practical. The change, as I see it, would be to make the central space of such spacer wider, so it would extend clear across the top of the end-bar of said frame. Why could we not use staples in alternate sides of end-bars? I realize that there would be some disadvantages connected with such forms of spacing the Danzenbaker frame—one thing, the end-bars fitting so close to the cleats that the bees would, I think, propolize them fast to said cleats; then, again, if one wished to lift a frame of brood out of the brood-nest to the super above, which, I understand, is considered desirable, it would not work very well with the staple-spaced frame; but if the metal spacers were used it would not be so bad, and certainly would be better, on account of uncapping, than to use the frame in the super the same as it is used in the brood-nest. Then there is another thing: I suspect the bees would work to the disadvantage of the bee-keeper if these frames were spaced as I have intimated above; and that is, to build comb clear around the edges of the end-bars and attach it to the body of the hive.

Robbinsville, N. J., Dec. 27.

J. L. HOWE.

[While it would be possible to space closed-end Danzenbaker frames wider apart by means of staples or other device, we would not recommend it. We doubt very much if the gain in thicker comb would compensate for the extra expense and annoyance in handling these closed-end frames with additional spacers. On the other hand, Hoffman frames can be spaced so that eight of them, or even six, will fill a ten-frame hive-body. The advantage of spacing such frames wide apart lies in the fact that extra thickness of comb will reach out to or beyond the width of the widened ends, thus clearing the uncapping-knife. Notwithstanding this, however, the majority use Hoffman frames, for extracting, spaced in the regular way, placing all the frames in contact with each other. If this is true, there is no reason why the user of Danzenbaker frames may not do the same thing.—ED.]

GIVING AWAY BUCKWHEAT SEED.

You mention the fact of giving farmers buckwheat as seed, in the interest of your bees, as fall honey bloom. Will you please tell me how much seed they sowed to the acre? also, with you, what per acre generally has been their return? Is there inducement enough to stimulate them to continue? At what price can it be had at Medina? Does it yield a nectar that sells well on the market? Any information you can give me will be appreciated.

M. F. SOULE.

Crestline, O., Dec. 29.

[The amount of buckwheat to sow per acre depends somewhat on the time of the year, the kind of land, and probably something upon the locality. In and about Medina we sow, on rich land for early sowing, one peck per acre; on poor thin land, two or three pecks; as late as Aug. 1, four pecks might be required. A five-peck seeding as early as July 15, on any good land, is inclined to run too much to stalk, to lodge, fall down, and amount to nothing. This lodging may be corrected somewhat by the use of commercial fertilizer.

Our experiments during the past summer in growing a considerable acreage of buckwheat in the vicinity of our north yard was indecisive as to the amount

of honey gathered. Our bees flew often enough to the fields, but the yield of honey apparently was not as large as from the crop that was sown on May 15 near our home yard. This made a splendid growth, and the bees were very busy on it nights and mornings. Contrary to what we expected, we harvested a good crop of seed. The conditions of weather for this early sowing were exceedingly favorable that year.

As to the amount of buckwheat that can be secured per acre, that depends upon the land and the kind of season. We have harvested as high as 45 bushels per acre. While this was good for Ohio, it would be considered a moderate yield for Northern Michigan, Wisconsin, Canada, or New York.

We would generally advise sowing right after plowing up wheat stubble. In this way we get two crops off the same land.

The honey from buckwheat is dark-colored, and a good many people regard it as the finest of all honeys for eating. Some who were brought up in the buckwheat sections of New York highly prize this dark honey, preferring it to the best clover, basswood, alfalfa, or sage. The average consumer, however, does not care much for it.

Buckwheat brings in Medina at the present time about 70 cts. per bushel.

Fuller particulars on buckwheat-growing may be found by referring to pages 317, 347, of last year's volume of GLEANINGS.—ED.]

CANDIED EXTRACTED HONEY AS A WINTER FOOD FOR BEES.

Kindly allow me to make a correction. On page 772, Dec. 15, state, "On this account we have adopted the plan of feeding between March 1st and 15th," etc. This should read "between March 1st and May 15th." On p. 786 of the same issue I find the heading, "Candied Honey for Winter Food." I tried candied extracted honey, feeding it in the months of December and January. I used several hundred pounds in the winter of 1908, and also some this winter. I place a shallow super or extracting-box on top of the hive, lay a board across the frames, place thereon ten to twenty pounds of granulated honey, and cover with a piece of burlap. The bees so fed come out in good condition.

This might be a failure in a severely cold climate. The winters here are open, sunshine nearly day, enabling the bees to fly every day with very few exceptions.

Hagerman, N. M., Dec. 27.

H. C. BARRON.

NO GNAWING WHEN HALF-SPLINTS ARE USED.

I find that, when splints are boiled a few minutes only, the bees will gnaw them; but when they are boiled an hour the wood becomes saturated with wax so that the bees do not seem inclined to gnaw.

I used many splints last season, and have tried both ways; but I find that, when they are boiled a long time, the bees do not bother them. I use only half-splints, because when I let the splints extend down to the bottom-bar the bees gnaw the two lower inches, so I tried cutting the splints in two in the middle, and have had no trouble since. H. E. Crowther uses only half-splints, and I have never found any gnawing in his yard.

I take a bunch of 500 splints and tie a string around each end, and cut it in two in the middle and drop each half bunch into boiling wax. Any number of splints may be boiled in this way, and those not needed may be laid away to be used at another time, when it is necessary to drop them into boiling wax for a few minutes only.

GEO. E. COFFIN.

Parma, Idaho, Nov. 22.

TROPICAL GRASSES FOR SPLINTS.

I notice that some substitute for splints is wanted that the bees can not gnaw. Such a substitute could be found in some of the grasses growing in the East Indies. I have not seen them grow, but I have seen broom-grasses bought in Singapore that I am sure would be the very thing. The color is brown, and they are very stiff. They are used for scrubbing decks.

STEPHEN ANTHONY.

Waitete, Auckland, New Zealand, Nov. 8.

MOVING BEES IN MID-WINTER.

I moved a lot of bees on a sleigh last winter in February a distance of five miles, and I never had bees come out of the cellar in the spring in better shape.

Haskinsville, N. Y.

M. C. SILSBEE.

OUR HOMES

By A. I. ROOT.

Thou shalt not covet.—EXODUS 20: 17.

There are good people in this world—a lot of them—people who, we might almost say, never do any thing that they *know* to be wrong. I often think myself that I do not feel that I want any thing that belongs to somebody else. A stalwart friend of mine, and a hard-working man, once said to me, "Mr. Root, I do not want a copper that I have not honestly earned;" and I think he told the truth. I replied, "Neither do I want a copper that I have not honestly earned."

Well, this friend went on to say that this text at the head of my talk was all right; but when it came to keeping that commandment he thought it was a rather tough matter. He was an earnest Christian man too. I quote his language as nearly as I can remember: "Paul tells us about a thorn he had in his flesh. Well, do you know, Mr. Root, I have been having a thorn in my flesh? It follows me like a low-lived dog; and, no matter how much I kick and abuse that dog, and shake him off, he seems soon to catch up, and to be pushing his nose into my affairs, getting his head between my feet, and sometimes he almost pesters the life out of me. But the Lord said, 'My grace is sufficient for thee,' and I have found it so."

That stalwart Christian man then related to me an incident of that low-lived dog which is worth repeating here. He said:

"It occurred right in church on God's holy day, surrounded by good Christian people; and, besides that, I was sitting close up beside my pastor, whom I loved and admired. Before he commenced his lesson he explained that our Sunday-school was going to make an appeal for money for a special cause, and he very much desired that his Bible class should set a good example. So saying he put his hand into his pocket and took out a quarter. I also took out a quarter. He asked the man who was taking up the collection to hurry up as we were already late in getting started. Now, the quarter I had in my hand was bogus, and I knew it. As my fingers slipped over the smooth coin it awakened old recollections, and I could not think at first what it was that conscience was prodding me about. As the collector came along he put out his hand for my contribution, and I recollected that the coin was bogus. As quick as lightning, that dog I have been telling you about, that had followed me all my life, suggested that the coin was innocently received by me, and it was not my business to lose it. For a moment I meditated putting the coin back into my pocket and getting something else for my contribution; but this dog or devil was suggesting that I was hindering matters—to 'let it slide,' and I did."

I started this Home paper with the expectation of saying something about making and passing counterfeit money. Somehow or other the above incident makes me feel as if there were a good many of us who have

dogs following us; but "my grace is sufficient for thee."

Why should *anybody* be willing to have any thing to do with counterfeit money? Where a man deliberately sends, say, \$2.50 of good money for \$25.00 that is counterfeit, and in return gets a box of sawdust, we say it is good enough for him. Every little while our United States detectives are getting hold of counterfeiters; and a good deal of the time they find *women* assisting in the work. We can imagine a man who wants money he has not earned; but the whole wide world naturally expects something better of women. I believe that counterfeiters excuse themselves by saying that Uncle Sam is so rich he will not mind it and never know it. What kind of philosophy is that? If the world could be cured of the sin of covetousness there would be no stealing—certainly no highway robbery. What an awful picture of total depravity comes up before us when we read of a highwayman knocking a man down and pounding him into unconsciousness in order to get his watch and money! This wretch in human form pounds and mutilates a poor hard-working man just as he would pound or mutilate somebody who had wronged him or injured him in some way. When a murder is committed, a great many times the criminal tries to maintain that he did it in self-defense—he had no choice but to kill or be killed. But this hold-up fellow or fellows have no such claim at all. They waylay an innocent honest person who is guilty of no offense unless it is that of being in a lonely place at a late hour of the night. Oftentimes a day laborer is waylaid, and may be crippled for life, if not killed outright, just to get hold of his meager earnings; and of late, *women* have been knocked down and choked in order to stop their screams, that these wretches might get hold of their pitiful earnings. Of course the saloon and the drink habit are at the bottom of most of this business. Every little while forgeries are unearthed, and cases of systematic stealing that had been going on sometimes for years. All of these terrible crimes are the outcropping and culmination of breaking that one commandment, "Thou shalt not covet."

We are often told that prevention is better than cure, and that the remedy for these crimes—at least the most sensible remedy—would be to commence away back. Teach the little children to have a *sacred regard* for what belongs to somebody else. Explain to them how wicked it is in God's sight even to *desire* what belongs to another. Teach them that a coin found on the sidewalk is not their own—at least until they have made every possible effort to find out who dropped it and to whom it justly belongs; and teach them, above all things, to respect the money and property that belong to the great public. Why is it that we constantly hear of so many people who, without conscience or scruple, appropriate public money? Our hard-working people are taxed; and, thank God, they are beginning to wake up and inquire *why* and for *what purpose* they are being taxed.

Those who live in growing towns and cities have grievous burdens thrust upon them; and yet public officers—men who have been considered straight and square when they are put into office (and have an opportunity) if they discover that nobody is watching them, because, perhaps, the people have unlimited confidence in their integrity—when they discover, as I have said, that nobody is watching, what a shame and disgrace it is—yes, a disgrace on humanity—that they *too* have been helping themselves instead of fulfilling their oath of office, and protecting the people who elected them! May God help us to bring about a reform and a revival along this very line. May that old tenth commandment—the one winding up the whole list—be held up and glorified by all the world as it has never been held up before—“Thou shalt not covet.”

David was a man after God's own heart, we are told; and he was so in his youth, and even until he had got to be pretty well along in life—a man whose life and character pleased God—that is, when compared with the other people in that early period of the world's history. In the 11th chapter of II. Samuel we read, “The Lord sent Nathan unto David.” Nathan came and told David the king a little story. I suppose the king understood it was something that recently happened in his domain. There were two men. One of them was very rich, with great flocks and herds. The other was a poor man who had almost nothing, and nothing at all in the way of flocks and herds except one pet lamb which was a great favorite with all the family. Well, this rich man had a visitor, and the rich man was in a hurry to prepare a repast for his guest. But instead of drawing on his own great possessions he sent and got the poor man's pet lamb; and he probably thought that, because of his riches and power, and of his neighbor's helplessness, nothing would be done about it. When David heard of it he was so incensed that he decided, after the fashion of kings in those days, that the rich man should be put to death. This severe punishment was probably to be considered a rebuke, and establish a precedent. After the king had pronounced sentence on this greedy rich man he naturally inquired who it was that had been guilty of such a dastardly act. The old prophet then looked the king squarely in the face and said, “Thou art the man.” Oh that we had some such prophets nowadays who would not be afraid to risk their lives, and who would dare to rebuke grievous sins in that way! David had been spoiled by too much prosperity. God, in his loving kindness, had given him every thing. He had wives without number; and, human-like, he was not satisfied. He cast covetous eyes on the wife of another man—the wife of a faithful soldier and a devoted follower of the king; and because this man stood in the way of his greed he caused him to be placed where his loyalty to the king would be the cause of his own death. Oh that we had more men who could stand prosperity and promotion—who could be

true steel, no matter how much prosperity and every thing else might be entrusted to their care! May God help us as a people and as a nation.

POULTRY DEPARTMENT

BY A. I. ROOT.

CHICKENS IN FLORIDA—MORE ABOUT IT.

When the 60 chicks in that “basket brooder” were, the oldest of them, about two weeks old, their quarters were getting small for them; and as I had in readiness a Clough lampless brooder that I have already mentioned I moved them over on to my newly purchased and fenced acre. This brooder costs \$5.00; and the “runway,” which is a sort of protected dooryard, is \$2.50 more. Well, I sent for the runway *particularly*, to have them secure from prowlers, even if the front door of the brooder was left wide open nights for ventilation. This dooryard is protected on top with $\frac{3}{4}$ -inch-mesh wire netting; and as it is to be placed in front of the brooder right close down on solid ground, the chicks are supposed to be safe. It *did* occur to me that I had heard of animals digging under the edges of the coop or brooder; but as the directions said nothing about further protection I concluded it was safe. The circular declares repeatedly that the complete \$7.50 combination is “animal proof;” and the word *animal*, to add emphasis, is in capital letters. Why am I all the while buying *more* brooders, especially when my own ten-cent one is *such* a good one? Well, because I want to get fully *posted* while I am about it. Did you ever have a bunch of chickens that pleased you so much every time you looked at them that you almost feared some calamity *would* befall them? Well, it was only yesterday when I saw those first 28 (that came from the Cyphers incubator) go on exploring expeditions over a great part of their new acre that I said to myself, “How I shall enjoy seeing these lusty fellows grow to big fowls before I go back to Ohio in May!” and then I added in thought, “Surely nothing can happen to *all* of them at any rate;” and then as they came tearing back, some on the wing, I added, “Did anybody ever see such large gauzy wings before, on chickens only fourteen days old?” Well, listen! this morning when I went out to see my pets, before it was quite daylight, I found one sprawled out dead in front of the entrance. I tore off the hover, and the greater part of my flock lay dead and wounded, scattered all over the floor. Just a few were moving a little, and making pitiful peeps of distress. Investigation showed that some animal had dug under the edge of this “animal-proof” runway, and then just “slaughtered the innocents.” Five or ten cents' worth of this same $\frac{3}{4}$ -inch netting on the bottom as well

as the top would have saved *me* several dollars' worth of agony.

Let me digress a little. Of late years I find myself getting more and more forgetful. Several times I have gone to the postoffice with important mail and forgot to mail it. I took all the mail out of my box, of course; but again and again I forgot all about the letters tucked away in my inside coat pocket. Finally, one day after I had forgotten to mail some of Mrs. Root's letters I stood up straight, threw back my shoulders, and made a "declaration" (or "declamation") something as follows: "Look here, Sue. This business of forgetting to mail letters has got to be *stopped*. We positively *will not* have any more of it." I think I smiled when I "spoke my piece;" but I was mightily *in earnest*, and I haven't once omitted to put all my mail in the office since. You *can*, my friend, remember important things if you *care enough about it*. If you are undertaking too many things for an old man or woman, then have fewer cares and worries, or carry a memorandum.

Let us get back to the chickens. I for one am done getting chickens up to two weeks old and then letting *some animal* undo all my work in just a few minutes. Poultry-netting is cheap, and it takes only a little time to make the little pets absolutely safe. You ought to be ashamed of yourself; and I for one *am* heartily ashamed of myself. I think I know now that "varmints," at least sometimes, "dig under."

As I write, Wesley is now going clear around our whole two acres, making the inch netting tight down into the ground, and then banking up along the fence besides. We are going to make frequent examinations to see if any prowler has even tried to get in; and, besides this, the chicks are going to be well "barricaded" nights, you may be sure. Wesley thinks we must have fenced in some animal when we enclosed the new acre, and it became so famished was why it killed twenty or thirty chickens when it couldn't eat more than three or four.

One day later.—We set a steel trap and caught him, but he dragged it into the door of the brooder and pulled himself out. He was probably a possum. He not only sorted out the largest and oldest, but, as nearly as I can make out, frightened a lot more to death, for I could discover no injury to their bodies. I say "frightened," because Wesley can't run the new lawn-mower anywhere near the chicks because they go almost crazy with fright. We have found this morning where the animal "dug under" the wire-netting fence also, and got into our enclosure, but we are still on his trail.

MORE TROUBLE.

After the loss, the remnant were put back into their old basket; but a shower coming up they were carried in. As we can't well feed them in the basket, when it let up a little I carried them out to the brooder again; and as it began to rain more I hastily dumped them into the yard before the entrance, the way we have a swarm of bees, for in-

stance; but the sight of the place (and the memory of the night before) seemed to frighten them so much they scattered in every direction out in the rain. Just at this crisis the rain became a regular downpour. Did you ever try catching chickens while holding an umbrella? I got them in the best I could; but both chicks and myself got a regular soaking, and then the wind swung round to the north and gave us a whiff of your Ohio zero weather just after Christmas.

Well, we have 23 sad-looking chicks left out of our beautiful flock of over 60. It almost makes me think a brooder-house would sometimes be a good thing, even down here in Southern Florida. I have raised chickens, however, down here all winter long for the past three winters, and have had almost no losses at all until just now. Had I stuck to my basket brooder, making another just like the first, when they became too crowded I might have had every chicken even yet. It seems they have got on to pretty nearly the same thing away out in California. Read the following from L. E. Keyser, in the *Petaluma Weekly* of Dec. 15:

During severe weather I kept these brooders in a hen-house having an open front, and in mild weather set them out in the yard during the day and carried them back into the house at night. This was a good deal of hard work—a thing we are trying to avoid. These brooders were light, being made out of cracker-boxes, and had handles for carrying them by. I never had chicks do better.

This is another striking illustration of how "great minds run in parallel channels;" but why in the world, brother, didn't you take light baskets instead of "cracker-boxes"?

By the way, my experience so far is in favor of a simple burlap sheet over the chicks instead of the ungainly and expensive hovers of woolen "carpet rags" hanging down over the chicks. Philo and Curtiss Bros. both seem to have adopted the burlap sheet. If the weather is very cold it is an easy matter to drop a piece of flannel over the frame holding the burlap. With the 60 in one basket they got too warm, if any thing, whatever was laid over the burlap sheet, even nights when it was down to 40.

I said in a former article the grain for 85 full-grown fowls cost only about 20 cts. a day. Since they are laying more heavily it comes to nearer 30 cts. per day; so we must have at least 9 eggs each day to pay the grain bill. Eggs are still 40 cts. per dozen.

MORE "TROUBLES."

Our efforts to trap the possum resulted in catching him twice; but he pulled out of the best steel trap that could be found in the neighborhood. The last time, he left in the jaws of the trap a piece of his hide, fur and all, almost as big as a half-dollar. Since then he kept away. Wesley suggests that he is finally "convinced." Well, after the possum's visit and the rainstorm's final effects were all over I had 15 chickens left that were getting so strong and well they were exploring again all over the premises. I told Mrs. Root last evening they were now all right, and even the weakest ones wouldn't need any more "hot brick," etc. Their basket

brooder was brought in every night, and placed up on a high work-bench in the woodshed, doors all closed, of course. Well, this morning, although the basket looked all right on the outside, I found six more mutilated chickens and two more missing entirely; and now we have only seven left of that beautiful flock of over 70⁸. I have written two editorials about rats during the past year, and I notice Ernest has another one in our last issue, and yet I have been so stupid as to allow rats to get the most of my poor remnant of chickens. It seems I have abundant use, of late, for my little prayer, "Lord, help me to learn the lessons thou art trying to teach me." Since I seem called to hunt up and trace out the hindrances to successful poultry culture I will try to learn by experience, and thank God the experience is sent to me rather than to some one who is less able to bear it. Mrs. Root suggests that my method of feeding invites rats and other vermin to our premises, and thinks we shall have to stop leaving grain all the time right before the fowls. I have been using all summer (in Ohio) a patented feeder and exerciser, warranted to head off rats, English sparrows, and every thing else. It worked all right for a while; but the sparrows soon learned to come in droves and get right down among the fowls, and grab every grain of wheat the chickens rattled down until they were satisfied; then the chickens could get their fill. I don't see why rats might not do the same. At present a cheap tin can, something like an extractor-can, tall enough so no rat can jump in and out, seems to be the only remedy; but in this case some of the hens seem slow to learn where to go for feed, and thus go hungry. After this you may be sure all my small chickens will be kept nights in a box covered with inch poultry-netting. We are just now making a "rat-proof" brooder house 8x14 feet. This will be so made that it can be all closed up frosty mornings, letting the sunshine in through windows on the south side. We do have a little frost here sometimes. Two nights during the past week the water froze in a pail out by the pump so it took quite a little push with the finger to break it. This is, however, the coldest weather here for many years—Wesley thinks the coldest since the great freeze of 1895.

*Just think of it (if you have had no similar experience), buying baby-chick food, boiled eggs, and meat from the butcher's, in order to have them "just get up and dust," and then when almost three weeks old, and just fairly past the critical time in a chick's life, to have some greedy "varmint" not only eat up the best of them but kill and wound a great lot he could not eat and had no use for! Never mind; it's a pretty bitter "skule," but we are learning.

I have been reading GLEANINGS for a few years, and it is packed full of good things from cover to cover. I inclose a clipping that I thought you would like to place before your readers.

Goffstown, N. H., Dec. 8.

G. W. SANDERS.

WHO ARE THE GUILTY ONES?

"Prisoner at the bar," said the judge, "have you any thing to say why sentence of death should not be passed upon you?"

A solemn hush fell over the crowded court-room, and every person waited in almost breathless expectation for the answer to that question.

The judge waited in dignified silence. Not a whisper was heard anywhere, and the situation became painfully oppressive.

Then the prisoner was seen to move. His head was raised, his hands clinched, while the blood rushed to his pale, care-worn face. Suddenly he arose to his feet, and in a low but firm voice said:

"I have, your honor. You have asked me a question; and I now ask, as a last favor on earth, that you will not interrupt my answer until I am through."

"I stand before this bar, convicted of the willful murder of my wife. Truthful witnesses have testified to the fact that I was a loafer, a drunkard, and a wretch; that I returned from one of my prolonged debauches and fired the fatal shot which killed the wife I had sworn to love, cherish, and protect."

"While I have no remembrance of committing the fatal deed, I have no right to complain nor to condemn the verdict of the twelve good men who have acted as jury in this case, for their verdict is in accordance with the evidence which I have heard."

"But, may it please the court, I wish to show that I am not alone responsible for the murder of my wife."

This startling statement created a tremendous sensation. The judge leaned over the desk, the lawyers wheeled around and faced the prisoner, while the jurors looked at each other in amazement.

The prisoner paused a moment, and then continued in the same distinct voice:

"Yes, I repeat it. I am not the only one guilty of the murder of my wife. The judge on this bench, the jury in the box, the lawyers within this bar, and most of the witnesses, including the pastor of the old church, are also guilty, before Almighty God, and will have to stand with me before his judgment throne, where we shall all be righteously judged for all our thoughts, words, and deeds."

"If there had not been saloons in my town I should not have become a drunkard, my wife would not have been murdered, and I should not be here now, ready to be hurled into eternity. Had it not been for these human traps I should have been a sober man, an industrious workman, a tender father, and a loving husband. But to-day my home is destroyed, my little children cast out on to the world, while I am to be hanged by the strong arm of the state."

"God knows I have tried to reform, and prayed for strength to withstand the licensed temptation; but so long as the open saloon was in my pathway my weak and diseased will power was no match against the fearful, agonizing, consuming appetite for drink."

"For one year our town was without a saloon. I was one of those who signed the remonstrance against the reopening of saloons in our town. One-half of this jury, the prosecuting attorney on this case, and the judge who sits on this bench, all voted for the saloons. By their votes and influence saloons were reopened, and they have helped to make me what I am."

The impassioned words of the prisoner fell like coals of fire upon the hearts of those present. The judge made a motion as if to stop further speech; but the prisoner hastily said, "Your honor, I am nearly through. Do not close my lips." Then he resumed:

"I began my downward career at a saloon bar, licensed and protected by the voters of this town. Had it not been for the license voters, the saloons which have wrecked my life and destroyed my home would not have existed. After the saloons you have established have made me a drunkard and a murderer I am taken before another bar, the bar of justice, and now the law power will conduct me to the place of execution, and hasten my soul into eternity. I shall appear before another bar then—the judgment-bar of God."

"And there you who have licensed the traffic must appear with me. Think you that the great judge will hold me, the poor weak victim of your saloons, alone responsible for the murder of my wife? Nay! I, in my drunken, frenzied, irresponsible condition, have murdered one; but you have deliberately voted for the saloons which have murdered thousands; and these saloons are in full operation to-day with your consent."

"You licensed the saloons which made me a murderer. I am the logical product of your own votes, and you are guilty with me, before God and man, for the murder of my wife."

"I stand here to-day a condemned murderer, only one of a million, the product of licensed-saloon votes. Let your conscience condemn you who have voted for the rum-shops. There is a remedy, and every sensible man knows what it is. I am done, your honor. You will close by asking God's mercy on my soul. I close by asking the Lord to have mercy on his people, and to open their blind eyes that they may cease to give their votes to consent to the running of licensed murder-mills in our country."

GLEANINGS IN BEE CULTURE

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EDITORIAL

By E. R. ROOT.

OUR readers will be interested in quite a valuable communication in this issue, p. 124, from Raleigh Thompson, furnishing indisputable proof showing how bees are guided sometimes by scent to new pastures.

"ON TO HIS JOB."

THE picture of Geo. S. Demuth, foul brood inspector for Indiana, on p. 112, indicates a remarkably pleasant face. If it is a true index of his general character (and we believe it is), he makes an ideal inspector, because he has all kinds of people to handle. Mr. Poulder's interesting article shows that he, Mr. Demuth, is "on to his job."

THE COVER DESIGN.

ITALIAN bees are doubtless the native *Apis* of the peninsula of Italy. Roman writers made mention of bees and honey from the very earliest times, and it is reasonable to suppose that these were of the same variety as the Italian bee of to-day. The Romans attributed long life to the use of honey as one of their chief foods. The design on the cover shows an early Roman bee keeper preparing to have a swarm.

THE HEAVY SNOWS AND CLOVER.

THE heavy amount of snow that seems to cover almost the entire northern States has spread a protecting mantle over the young clovers of last fall. This will mean much to their growth this coming summer. In this connection, it is pleasant to recollect that we have generally had a good flow from clover following a winter in which snow covered the ground almost the entire period of cold weather.

DOES ALSIKE OR WHITE CLOVER CAUSE BLOATING IN CATTLE?

SOME days ago a correspondent wrote us asking this question; and as we were not able to give authentic information we referred the matter to our Ohio Agricultural Experiment Station at Wooster, Ohio. L. H. Goddard, the chief of the department of co-operative experiments, replies:

Your letter of the 22d, regarding alsike or white clover causing bloating in cattle, is received. Reply-

ing thereto, I would say that, when cattle eat heavily of any succulent crop, such as the clovers or rape, they are subject to bloating. I do not call to mind any special experience with alsike clover, but have had quite a little experience with the ordinary medium red clover. Quite a number of cattle are lost every year from this trouble in the cattle-pasturing areas of Southwestern Ohio. By watching the herd, using a proper admixture of dry feed, and in rare cases the trocar and cannula, the most of the loss can be avoided.

L. H. GODDARD.

Wooster, Ohio, Jan. 25.

If any of our subscribers are able to give any information further than the above we shall be pleased to hear from them. So far we have had no report of white clover causing any bloating, and we doubt somewhat whether it would do it, owing to the fact that cattle would not be able to get enough of it at any one time.

THE AUTOMOBILE VS. THE HORSE FOR OUT-APIARY WORK.

VERY soon we shall have several articles on automobiles for out apiary work. The time has arrived when one can buy a good serviceable machine for about the price of a good horse and buggy or horse and wagon. A machine will make trips to outyards in one-fourth the time it would take a horse, and will be capable of carrying loads up to 500 pounds. Of course, there are auto trucks that will carry two or three tons, but they cost several times more than a horse and wagon.

We have no ax to grind, no agency; and as we have had considerable experience ourselves in handling machines we can perhaps give the reader some hints on how to purchase and how to handle a machine after he gets it. This we shall do in a series of short articles.

The time is coming, if it is not already here, when the automobile will enable the bee-keeper to carry out more easily W. Z. Hutchinson's injunction to "keep more bees," that is to say, he can have more outyards, and, what is more, spread them further apart, thus securing a wider acreage of bloom. With the machine he can go to an outyard twenty miles away in the time it would take him to go to a yard five miles away with a horse and buggy; and, what is more, the self-propelled wagon is not afraid of stings. It can be driven right among the bees, gentle or cross, and be loaded at the most convenient point without danger of a general spill or mix-up.

For the reader's present information we would advise him not to buy some new make simply because the price is low. There are several standard makes that have been on the market for years, first class in every respect, that can be bought for \$500 and under. Then if one knows how to make the selection he can purchase a number of second-hand automobiles, practically as good as new, for from \$175 to \$250. But to make the horseless carriage a success the owner must learn to be his own chauffeur; must understand something of the general principles of a gas engine, and employ a little automobile sense if not horse sense. More anon.

LOOKING BACKWARD; A. I. ROOT'S EARLY BEE-KEEPING EXPERIMENTS; THE BREAD THAT WAS CAST UPON THE WATERS COMING BACK TO-DAY.

The reader will, perhaps, be interested in the discussion between F. Dundas Todd and the editor in this issue, on page 122. No wonder Mr. Todd could find nothing in any of our current literature on the subject of giving bees meal or flour candy direct. After reading his article we recalled some of A. I. Root's early experiments away back in the 70's—how he tested this and that kind of candy; how he mixed flour and meal of various sorts into the candy; how he "scorched" his syrup and killed his bees. The result of all these experiments was given in this journal at the time. All this took place when the present editor, though a lad, was learning his A B C's.

A. I. Root, during the early 70's, could think of nothing but bees. His business of manufacturing jewelry had reached such proportions that he found it necessary to seek rest and recreation outdoors. Well do we remember how, as a boy, we went to Cleveland with him to look up books on bees; how we followed him on bee hunting expeditions; on tramps across the fields to see what the bees were working on.

Langstroth paid him a number of visits at Medina, and well do we recall the interesting chats A. I. Root had with that father of American bee keeping. Langstroth was a charming conversationalist, and we could have sat at the feet of this Gamaliel hour after hour. We have wondered many times since what it would be worth to-day if we could have had these talks taken down in shorthand, because Langstroth drew on his rich and varied experience in bee culture when he was developing and perfecting the hive and system that revolutionized bee culture throughout the world.

Then there used to come to our home such men as Dr. C. C. Miller, Mr. G. M. Doolittle, Prof. A. J. Cook, and other celebrities. At the table, almost the entire conversation was bees—bees for breakfast, bees for dinner, bees for supper, bees everywhere and all the time except when A. I. Root was attending to the jewelry business up town; but his heart was elsewhere.

He took nothing for granted, but tested

every thing in the yard. No wonder his advice was eagerly sought, because during the few years that he gave a large part of his time to his bees he exploited almost every new field.

He made the first perfect honey-extractor that had ever been sold. You should have seen the first machine. It was a rare combination of a tin can, wooden cross-arms, and an old apple-paring machine for gearwork. Later was developed the beautiful all-metal Novice extractor of to day.

He was one of the first to see that Langstroth had blazed the way for the entire world. He adopted the Langstroth hive and dimensions after having tested every form of frame and hive. He was the first to bring out the one-pound section honey-box. He tried indoor and outdoor wintering. One winter he covered every hive with a big pile of manure. It was not altogether a success. Another winter he packed the hives with straw; later on he began to follow J. H. Townley, of chaff-hive fame.

Along in the early days news came across the water of the invention of comb foundation. A. I. Root was convinced that this was a great step forward. He could hardly eat or sleep, so eager was he to get up a machine by which he could make what we then called "artificial foundations." He employed Alva A. Washburn, an expert machinist, to make him dies. In the mean time Mr. Root tried flat plates, small ones at first, and then larger ones. He had type faces made, and began the work of setting up the type and locking it up in forms. He tested every scheme then known of making comb foundation. He was the first to make foundation with a paper midrib. Later he tried thin veneer wood, and last of all, wire. Mr. Washburn finally brought out an embossed pair of rolls that were almost as perfect as those made to-day.

It was during this period that A. I. Root built a double-walled bee-house, walls 12 inches thick, filled with sawdust. During the summer he used this for extracting, and during cold weather for wintering bees. But his indoor scheme was not altogether a success. When he adopted the J. H. Townley method of wintering in chaff he adopted what is in use to day, so successful all over the United States.

As we go back to those early days we think of the long series of experiments conducted by A. I. Root in trying to winter bees in a greenhouse. His plan was to "educate" his pets to fly out inside the greenhouse and go back into the hive. He put out rye meal, and partially succeeded in getting the bees to take it and return to the hives; but hundreds, yes, thousands of them, bumped their heads against the glass in the vain effort to escape, and the majority of them never returned. But he did succeed to some extent in getting them to visit the flowers that he had out, and go back to the hives.

We also recall how, in these early days, he tried wintering in a house-apary. He con-

structed a double-walled hexagonal building that we still have; then put a stove inside of the building. The bees all had access to outdoors, and, theoretically, the scheme looked as if it might be a brilliant success. The stove would keep the inner room warm, and also the colonies; but the experiment, like some others, was not altogether a success. The bees were over-stimulated, and he finally came to the conclusion that artificial heat was worse than nothing.

The manufacturing jewelry-shop during that time was being converted over into a wood-working shop upstairs. First a foot-power saw was put in operation; later a power saw was attached to a windmill; and many and many a time did the writer turn in and help while A. I. Root made bee-hives. During part of this time, at least, he was writing for the *American Bee Journal* under the *nom de plume* of "Novice." These articles in both periodicals not only stimulated a demand for a full account of his experiments, but led to a call for bee-supplies. A modest little catalog was gotten out in 1873 and '4, advertising the "Simplicity" bee-hive, "Simplicity" bee feeder, "Novice" all-metal honey-extractor, metal-cornered frames, "artificial comb foundations," and dovetailed one-pound section boxes. But the demand for bee-supplies grew at such a pace that the unreliable windmill failed to keep up with the orders, and a steam-engine was put into commission. It was not long before the little shop was running night and day. Larger quarters were urgently needed, and it was plain to be seen that the jewelry business up town must be sold and a new factory put up near the railroad track. But the new building, 40x100, two story and a basement, took so much capital that it was rumored that A. I. Root would be "busted" before the year was out: that he had "bit off more than he could chew;" and it was, indeed, a serious problem as to whether he would be able to make ends meet. But his honesty, a big asset in his favor, had never been questioned; money came to his rescue from unexpected sources, and you know the sequel.

Most of this early experience that laid the foundation for his manufacturing interests, GLEANINGS IN BEE CULTURE of to-day, and the A B C and X Y Z of Bee Culture, occurred during the early 70's. Indeed, we may say that A. I. Root's best work occurred between the years 1870 and 1880. It would take a volume to record all his experiments. It is needless to say that many of them resulted in failure, and the world knows that many of them were successful. This early work cost him thousands of dollars, but the money was well invested. Fortunately for the writer and GLEANINGS IN BEE CULTURE, as well as the A B C, we were an eye-witness to practically all of this early experimental work. To have seen it, to have been in and around it, to have had knowledge of the failures as well as of his successes, is a heritage of which we feel indeed proud. While we were only a lad then, it can never be forgotten. It could not be otherwise, for, A. I.

Root's enthusiasm knew no bounds. Many a time have we seen him throw up his hat in the air from the very exuberance of his enthusiasm, especially when some experiment "panned out" well. Nothing would do but that every member of the family would have to go out into the yard and see. He was a regular hobby-rider when he got started, and sometimes his friends said of him that the hobbies ran away with him.

Many and many a time when answering questions to-day we have used the knowledge of this early experimental work of A. I. Root's, some of it over thirty five years ago. For example, a correspondent had just patented a foundation having paper for a midrib. He was very enthusiastic about it, and thought it was going to work a revolution. Remembering well that A. I. Root had been all over this, that bees many times would reject the foundation with a paper midrib, we felt it our duty to tell our correspondent the plain truth, and we did. At another time our friend Danzenbaker got up a valveless smoker, and even went so far as to patent it. Going back in memory we recalled the time when A. I. Root made just such a smoker, and how he sold them by the thousand. Then when Mr. Todd desired to know something about giving bees nitrogenous food in the hive, those early experiments came back to mind again, and a reference to the back volumes of GLEANINGS soon brought the whole thing back vividly as if it were yesterday. These are only samples from the storehouse of those early days, and GLEANINGS is profiting by it even to-day.

Later.—A proof of this was sent to A. I. Root for suggestions or corrections. In reference to the feeding of rye meal in the greenhouse he says:

Just a word in regard to the feeding rye flour in the greenhouse, alluded to in the above. At that time I was losing many colonies by "spring dwindling," and sometimes these contained valuable queens that it was quite an object to save. I figured this way: If I could construct a greenhouse that would enable me, with protection, to feed up a weak colony and get it to rearing young bees under glass, there need be no spring losses. Well, I succeeded in feeding the bees under glass, getting them to fly from the feeder back to their hive safely and build comb; but, although the queen laid eggs every day, none of the eggs were ever hatched into larvae. Something was evidently wanting, and at this crisis I got them to working on rye meal as well as the syrup. When the first bee loaded up with pollen, and flew safely back into the hive, I sailed my cap. Next morning the eggs were swimming in the well-known milky food, and in three days or less we had a patch of larvae growing as naturally in the month of January under glass as we usually see it in May. I declared then I was "out of the woods," and henceforth there need be no more "spring dwindling." Mrs. Root, however, suggested it was unwise to "count chickens," etc. Well, after I had a lot of young bees not only hatched under glass, but out in the sun, trying their wings and having their natural "playspell," then I called all the family to witness that my "gold-mine" was a reality. I did build up several weak colonies in this way and saved them; but it was a lot of work, and when a warm day came and the greenhouse had to be opened for ventilation, the bees got out and didn't find their way back. We put wire cloth over the ventilators, but the bees buzzed on the wire cloth, and many were lost. There are now bees kept regularly in the large cucumber-greenhouse to fertilize the blossoms. When one colony gets weak from loss of bees another is moved in while the first is put out to build up again. I at least fully demonstrated that bees can not rear brood on honey alone. They must have pollen or a substitute.—A. I. R.

STRAY STRAWS

BY DR. C. C. MILLER, MARENGO, ILL.

ON PAGE 81, third full paragraph last line but three, should it not be "Leave 10 days" instead of "2 days?" [Yes, you are right. This was a typographical error.—ED.]

IF I UNDERSTAND, p. 81, correctly, putting a story filled with European foul brood on top of an excluder over a healthy colony will not infect the latter. Is that possible? [We would doubt the wisdom of placing healthy brood over a colony that has disease, although perhaps it can be done.—ED.]

MR. EDITOR, you have expressed page 89, what I have been quietly thinking for some time, and mustering courage to say—that whatever extra immunity to foul brood Italians may have, is not because they are Italians, but because of their extra vigor. If you get that same vigor in any other bee you will get the same immunity.

AMENDMENT to Straw, page 68. Instead of placing hives singly in a row, place them in pairs, as said on p. 68. Then to each of these pairs set another pair, the two pairs back to back. That will give you four times as many hives on the same ground as by setting hives singly, with no more danger of bees entering wrong hives in one case than the other.

GEORGE E. COFFIN, please accept thanks for that little kink of boiling a lot of splints in advance, to be laid away for another time, p. 92. Simple as it is, I wasn't smart enough to think of it. It's more troublesome to boil a few at a time as you use them. Now will some one please tell me the best temperature for the splints when being pressed into the foundation? Should they be lifted directly out of the wax boiling hot, nearly cold, or how?

I'M AFRAID, friend A. I., that when Wesley has got clear around that two acres, making the netting tight down into the ground, and banking up besides some of your biddies will still come to grief. The varmints will naturally dig down when they come to obstructions, and then work under. I'll tell you what to do: Let down the netting so that it laps over on the ground six inches outside. The varmints don't know enough to start back that far from the fence.

THE THING I always dreaded most about out-apiaries was the hauling, and I thought if I could only haul bees without horses all would be lovely. But that story of R. F. Holtermann, page 75, shows that horseless hauling has troubles too, and I'm more glad than ever that I'm down to one apiary. [Holtermann would have got along very nicely with his traction engine had it not been for the deep sand and mud. He planned all right; but no man can figure on a thunder-shower coming on at any given minute. The troubles of a traction engine in the mud are much the same as we find with an automobile. Just after a good smart shower the

roads are much more slippery than after an hour or two. Our friend Holtermann was trying to make a trip, rain or shine.—ED.]

A. I. ROOT, some of us may resist all the things you mention, p. 93, and yet trip up on something else. For example, some people think it almost a joke if they can evade paying on a street car, not realizing that it is just as much stealing as if they took 5 cents out of some one's pocket. I've heard it defended by saying, "It's the conductor's business to collect it;" but that doesn't lessen your obligation to pay it. I knew a person who was always on the lookout for postage-stamps that had been used and not properly canceled, believing it all right to use them again, not realizing that to use such a stamp was stealing two cents.

WESLEY FOSTER, the wind may make a difference by hindering or helping flight, as you say, p. 69, but I suspect it makes vastly more difference by wafting the fragrance. Ever watch bees working on a basswood or fruit tree?—always hovering on the leeward, never on the windward side, even in a very gentle breeze which can not affect their flight. I don't know, but I should think they would work against rather than with the wind; for when working against the wind the fragrance is always toling them further on, while with the wind the fragrance is always at their backs. [This is similar to the theory that E. D. Townsend employs in his argument, page 110 of this issue. You are not talking about the same thing, of course, but your reasoning is the same. We believe you are right, too.—ED.]

ERNEST, that's a good idea, page 65, to eat your breakfast food and honey cool; but for the sake of accommodating an old friend couldn't you just as well eat it at the beginning of your breakfast and still have it cooled? Spread it out on a plate and it soon cools. I'm afraid there is something wrong about this whole dessert business. Generally it means just so much added after a full meal has been taken, and that has shortened many a life. I don't want to be lonesome, and I'd like to have you live as long as I do. [It is not the general policy at our house to have dessert after a meal. We cut that out years and years ago. But the cold breakfast food that we were talking about is not strictly a dessert. It is taken as a part of the ration that sustains the natural wear and tear of the body and mind. We have tried cooling off the breakfast food by spreading it out on a plate as you suggest. The plate soon absorbs a part of the heat, and then slowly gives it back to the breakfast food. No, we want our food either *hot* or *cold*. We want our breakfast food served *cold* either at the close or near the close of the meal if we are to have honey in it. By the way, the old-fashioned cracked wheat (we crack ours in a small hand-grinder) cooked in the good old way, and served cold with thick extracted honey, beats any modern breakfast food that was ever put on the market, and it does not cost a quarter as much.—ED.]

BEE-KEEPING IN THE SOUTHWEST

BY LOUIS SCHOLL, NEW BRAUNFELS, TEX.

Texas prospects are fine, for the 1910 honey crop promises to be a big one.



THE AGE OF HONEY.

Referring to my article on this subject in a former issue, Mr. R. Kuhne, of Pomona, Cal., has this to say: "You are entirely correct in what you say concerning the age of honey. I have samples of orange honey that I have kept for the last twelve years, and the color as well as the flavor is different every year. That produced ten years ago approaches a dark brown."



OUR FIRST INSPECTION TRIP IN THE SPRING.

Every fine day that we have now we visit some one of our apiaries, many of which we have not seen since the last honey was hauled away in August or September. Our work on these trips consists in overhauling every colony, taking an inventory of the stores, seeing whether there are queens, determining the number of weak or dead colonies. Each hive has a super or two with shallow combs partly filled with honey, and these are slightly tilted up, so that a glance tells us the condition of the cluster and whether there is the right amount of honey in the brood-chambers. The weight of the supers is also noted when they are raised. If all is well the supers are put into place, and a small stone or half brick (always used on our hives to mark the conditions) is placed on the front end of the cover. If the colony has a superabundance of stores, and can spare some for others that are needy, another small stone is placed beside the one already on the front end. If the colony should be short of stores the stone is placed at the rear of the cover. Weak colonies are designated by two stones at the center of the cover, and queenless colonies by a stone at each end. When we have gone through the whole yard we are ready to equalize; and as many as have two stones on the rear of the cover, showing that they need to be fed, receive a super from those that have two stones on the front end. The light or empty super that was on the needy colony is put back on the hive from which we took the full super. On each cover, after this change is made, one stone is then placed at the front, like all the rest which are "O. K."

All weak and queenless colonies are united. We simply set the brood-chamber of each queenless colony on top of a weak queenright colony, making sure that there are enough stores. Then a stone on the front end of the cover shows that these colonies are O. K. also. If there should be only one or two weak or queenless colonies, and if it is not possible or desirable to unite

them, they are distributed around on top of some of the colonies in the yard that are not quite as strong as others.

All this requires very little time, and yet the work is thoroughly done. By keeping part of the stores in the supers left on the hives the year round, and when the cluster is nested between the brood chamber and super (the place which the bees seem to prefer), it is an easy matter to ascertain the conditions in a moment, and also of the stores, without prying off a single cover of the hundreds of colonies that are examined.

We make a note of the number of colonies that are finally all right for spring count, and in this way we can know the number of bottoms and covers that may be used for some increase later; also, at the same time, we make a note of other conditions that may be of interest. The number of weak colonies and the condition of all the others is generally noted down for references, while an inventory of the stock at the yard is taken, which aids materially in planning the season's work, for we can thus know what may be needed at each place. The yard is then left for our next trip a month later.



OUR SPRING CLEANING.

February is the month when we have a regular house-cleaning in all of our yards. All the hives are leveled anew, and put on a good foundation. The hives have a fashion of leaning in all directions at the end of the season if a heavy load of honey has been stored, and especially if the soil in the yard is loose. These have to be straightened up again; new foundations for increase or other colonies are put down also. For our foundations we use broken bricks, which can usually be had for nothing. Often such heaps can be found in back yards or in out-of-the-way places. Two halves of a brick are placed under the front cleat of the bottom-board while one under the center of the back cleat is sufficient. Four bricks one at each corner, would be better in soft ground, if there are plenty of bricks. It takes a large number for a thousand colonies.

All worthless covers and bottoms are replaced by good ones, and dilapidated fixtures are taken home for repairs and made ready for use later. Everything about the yard is straightened up; the fences are repaired, and the roads leading to the apiaries are put in good shape for the season. Limbs that are in the way, and all unnecessary brush and trees, are cut down. The stove-wood is cut out of it, and the rest is burned with all the trash which can be raked up. A wonderful change is wrought in the looks of each yard, and it pays to have every thing in apple pie order and out of the way for the rush later. If the weather is warm enough, every thing receives another coat of paint also, except such hives as have been painted within the last year or so. Three or four weeks later the colonies are all overhauled for an inside cleaning.

SIFTINGS.

By J. E. CRANE, MIDDLEBURY, VT.

That seat and tool-box, page 699, Nov. 15, looks as though it might be a fine thing where the hives are low enough. It is much better than a one-legged stool.

If a beginner can not profit by an illustrated article, page 739, Dec. 1, on handling combs that are insecurely fastened in the frames he had better give up the business.

On these cold winter mornings, as we eat honey on our buckwheat cakes we should remember the thousands of bees that spent their lives collecting the nectar that we enjoy.

Mr. Foster, page 591, Oct. 1, has some very good ideas about marketing or selling honey. "Visit with him," the prospective buyer; "any man you are talking with should be your friend—that is, you should meet on a friendly basis." *This is golden.*

We are glad that the white-clover prospects of the country are good, page 724, Dec. 1. They are not as good in this section as we wish, for our autumn was as dry as it was a year ago. We have a much better show for alsike, however, than last year.

Page 696, Nov. 15, in the discussion on hive size I found myself, after using ten-frame Langstroth for years, drop to eight frames for comb-honey production, and again when, three or four years ago, we began extracting we went back to the ten-frame size as larger.

Dr. Miller gives his experience in feeding sugar syrup, page 590, Oct. 1, and again on page 724, Dec. 1, and he comes to the conclusion that two or two and a half sugar to one of water is about right. I agree with you, doctor, on the two-to-one basis. We have fed some 8000 lbs. of sugar this fall with about 4000 lbs. of water and 800 of extracted honey.

The Massachusetts Society of Bee-keepers invited me down to Boston the first week in December to tell them how to produce honey in New England; but after hearing President Britton tell how sections should be put on as soon as honey came freely, and that he had taken off finished sections the 19th of April, and had the past season taken 300 lbs. of comb honey from a single colony, I thought I would like to go to school awhile before I tried to teach.

On p. 622, shade in the morning is represented as being detrimental to the welfare of the colony of bees. I have some doubts

in regard to this. I have kept bees for many years in places where the sun scarcely ever shone on the hives, and have failed to notice enough difference to make it worth while changing their location; indeed, I have sometimes found my most productive colonies in such places. [Let us hear from others on this.—ED.]

Dr. Miller, page 656, Nov. 1, thinks it possible that there may be a difference in honey-dew that makes bees winter on it in some places and die in others, while the editor thinks the difference not "dew" so much to the "dew" as to the honey mixed with the "dew."

Well, Mr. Editor, here is a clear case of where you and I don't think alike. Some years ago we had a great flow of honey-dew about Sept. 1, after all white honey was gathered, and we have little other in this section. I had three large apiaries stretching from east to west about three and a half miles apart. The conditions were as nearly alike as they well could be, as it seemed to me; yet the two outside yards wintered very badly while the one between them wintered with little loss. The same appeared to be true in other locations further north. Now, isn't it reasonable to suppose that the honey-dew from oaks or elms should be quite different from that gathered from basswood? We know that that from willows is of such inferior quality that even the bees refuse to gather it when abundant. [We don't know.—ED.]

I was much interested in Dr. Miller's article on the improvement of bees, page 697, Nov. 15, and especially in the fact that he thinks the black bee of Switzerland a distinct type. I believe that these bees are no better than our own, or, at least, than the better strains of our black bees, and that the reason they are so highly prized by the Swiss is that they are better adapted to the flora of Switzerland than the Italian bees. Bee-keepers living in sections where buckwheat is the principal source of honey have told me that they get better results and more honey from the blacks than from the Italians, or from a mixture of the two. I have noticed of late, however, that the Italians are being used more extensively, even in buckwheat localities, but not, so far as I have learned, because the Italians gather more honey, but because they are better able to battle with disease. May this not be the reason why some methods of treating foul brood are more successful with some bee-keepers than with others? Mr. E. W. Alexander, whose method of treatment of the black or European foul brood was by simply keeping his colonies queenless for three weeks, used the Italian bees, I think, exclusively; and Dr. Miller, in curing his bees so successfully, also has this race. Has any one with black bees tried the Alexander method? If so, what has been the success of such trial? [Dr. Miller's bees are hybrids.—ED.]

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

DOES THE AGE OF QUEENS GOVERN SWARMING?

"Mr. Doolittle, do you think that the age of queens has any thing to do with the tendency of colonies to swarm? A bee-keeper from the East was at my house a few days ago, and he claimed that his colonies having queens only one year old were very much more inclined to swarm than those having older queens."

"I hardly think that is the case, friend Hunt; but to be sure that such a claim was right it would be necessary to know how many colonies having queens of different ages were in observation, and to know what proportion of them swarmed."

"I did not think to ask him about that. I myself think that colonies having the year-old queens are less inclined to swarm than those having two, three, or even four year old. In other words, my experience seems to indicate that the older the queens in any colonies, the more those colonies are inclined to swarm."

"Possibly you are right; but I think other conditions have a greater bearing on the swarming matter than the age of queens. Sometimes it may be one condition, sometimes another, and perhaps more than one. If there is a lack of ventilation, causing extreme heat, or any other condition which may render the hive decidedly uncomfortable, I have known bees to swarm without even beginning the construction of queen-cells."

"Well, now you speak of it I do believe this may have much to do with swarming; for one summer I had my bees in a place entirely surrounded with trees and buildings so that scarcely a breath of air could get to them, while the sun poured in on them from eight in the morning till four at night, and those colonies, while left there, swarmed to beat the band, as the expression goes."

"Again, it may be the failure of the queen to lay sufficiently. Under this condition queen-cells are built; and if the season of the year and weather conditions are all right, swarming will follow; if not, the queen will be superseded. However, more frequently it is the lack of sufficient room, or, to put it more nearly correct, lack of empty combs for the queen to lay in, that causes swarming."

"Yes, the bees begin to restrict the queen as to the number of eggs she lays, as I have sometimes expressed myself. There is a whole lot to this swarming question."

"Now let us come a little closer home in this matter. We are comb-honey producers, therefore we can look into that part of the matter. We can give room enough in the supers, but this is mostly in the shape of foundation, or only starters of foundation,

instead of fully built combs; and when the honey comes in freely, the bees can not build out the foundation fast enough to hold it; and much of that coming in from the fields is put into the brood-nest until there is not room enough for the queen to lay; and the first thing we know, under such conditions swarming begins."

"But does not a young queen assert her egg-laying proclivities even under these conditions, so the colony is slower in making preparations for swarming than a colony having an older queen?"

"After years of observation, I believe that such is the case. But just why a year-old queen should so assert is something I do not see any adequate explanation for; but I believe it to be a fact all the same; and in this we find a presumable reason why young queens are less likely to swarm than older ones. But let us not forget that more bee-keepers work for extracted honey than for comb honey; and with them the case is different. That changes the condition entirely. If enough empty combs are given, the queen will not be crowded, but she will have all the space needed in which to lay; and, no matter whether she is one, two, three, or even four years old, there is not likely to be any swarming until she begins to fail."

"But do not bees swarm when worked for extracted honey?"

"Not when managed right. Quinby gave us the secret nearly half a century ago when he said, 'Hive a swarm in a box the inside of which is a cube of four feet; and if the swarm is large enough, or the apiarist helps the bees to fill that box with comb, swarming will rarely result; but if that swarm builds comb in only 2000 cubic inches in one corner of the box, the bees will swarm in future years about the same as they would in a hive of the 2000-cubic-inch size, the empty room outside of the comb built having very little influence upon them.' It is the *amount* of empty or fully built comb that is important. My experience is that, where combs are supplied so that the queen has all the room she can use for egg-laying, and at the same time such comb supplies all the room the colony wishes for the storing of honey and pollen, such a colony will never swarm, no matter how numerous in bees it becomes, even if beyond 100,000, nor how old the queen is."

"But we can not use such a large amount of comb as this when working for comb honey."

"Correct; and now we are getting back to where we started. Because the using of lots of comb in the brood-nest is unprofitable when working for comb honey, many have swung to the opposite extreme and have used very small hives. Where such hives are used it takes no very keen vision to see that the most prolific queens, usually the youngest, will fill all of the available space the quickest, and swarm the first and most often. In fact, an inferior queen might have all the space needed, and not swarm when in a hive too small for a better queen."

GENERAL CORRESPONDENCE

SOME OBSERVATIONS ON MARKETING HONEY.

**Unequal Distribution; the Uninformed
Bee-keeper and the Devious Methods
of Some Honey-buyers the Source of
Low Prices.**

BY OREL L. HERSHISER.

Within the past fifteen or twenty years there has been a constant and marked advance in the price of nearly every thing the bee keeper has to purchase, including food stuffs and bee keepers' supplies. In many instances the advance has been upward of 50 per cent, as in the case of meats, dairy products, and lumber. On the other hand, there has been comparatively little advance in the price of honey. As long as the expense of consumption and the proceeds of production remain out of equitable proportion, and until the product of the apiarist has an exchange value for a just equivalent in other goods, so long ought the conditions and influences that control and make the prices of honey remain the subject of profound and earnest study and discussion by the bee keeper.

In the marketing of honey, three general classes of prices are recognized: viz, the jobbers, the wholesale, and the retail. When the dealer purchases from the producer the jobber's price is paid. The dealer or packer sells at wholesale, and the grocer or other distributor sells at retail.

Sales made by the commission merchant are made on the jobbing basis if of considerable volume, in which case the producer receives the jobber's price less commission. It is almost needless to say that the producer who sells through the commission merchant nearly always receives the lowest of all prices. If the producer jobs his honey by direct sale to the dealer there is opportunity for a clear understanding as to the price, and he is in position to know just what he is to receive.

By reference to some recent market quotations it is noted that "No. 1 and fancy comb honey would bring from 14 to 16 cts. delivered, such honey going to the retail grocery trade at an advance of from 2 to 2½ cts. on the prices quoted." It may be inferred that this advance, amounting to approximately 15 per cent, is the usual gross profit when selling at wholesale. Lastly comes the retailer's profit of from 25 to 75 per cent on his purchase price when sold to the consumer.

The retail trade does the greater part in distributing, and the dealer and manufacturer furnish a market for the larger part of the product. It is recognized that the wholesale merchant, purchasing in the jobbing way, and the retailer, are valuable factors in trade,

and that they present avenues through which a large portion of the world's production, of all kinds, can readily reach the consumer.

It is also recognized that prices of most commodities are fixed by the inexorable law of "supply and demand," which, like the laws of the Medes and the Persians, "altereth not." However, there are some exceptions, which, when closely studied, are found to prove the rule. Supply and demand, in these later years, have come so much under artificial influences, such as trusts and combinations in restraint of trade, either under contract or by tacit agreement, that there may be scarcity because of goods withheld from market to create a corner and oversupply because of artificially glutting the market to "freeze out" a rival. Sometimes, when there is a normal supply on the whole, markets in one quarter are glutted while in another locality they are bare, due to unequal distribution.

The honey market is often adversely influenced by merchants purchasing from the unwary producer his crop of honey at a ruinously low price and selling the same at retail, as a leader, at a small profit. Thus, recently one of the leading stores in Buffalo was retailing a fancy grade of comb honey at 17 cts. which, no well informed bee-keeper will dispute, is far too low for this season of scarcity of fancy honey. A leading store, by one or two purchases of considerable volume from uninformed bee keepers, can thus exert a powerful adverse influence on the market.

The devious methods of some honey-buyers are fruitful of market depression. The aim seems to be to create an artificial competition of the producers rather than to work the other end of the market by establishing prices at the normal level. The dealer writes to his list of honey-producers asking the amount of his crop and for a quotation of his price. After a few lots have been purchased of the producers making the lowest quotations, the scheme is to try to establish the low price by reporting large supplies and an easy market in consequence. If every producer would seek reliable information of the editors of bee journals or crop committees, and not make a price until well informed, and then, in answer to all such queries, quote the price that is advised; and, instead of disclosing the amount of his crop, ask "How much do you wish at that price?" and stick to his price, I think it would have a salutary effect on market conditions.

Another ruse, recently noted, was to make as low an offer as possible, and yet have hope of getting some shipments, with the luring and innocent looking offer that "if I can do better than this, or if market justifies it, or, in other words, if I have to pay others more, I will pay you more likewise," making final settlement afterward. Of course, out of a large list of bee-keepers enough, shipments are likely to be made to relieve the dealer of any obligation to pay a higher price, even if the crop and conditions were

such as to have caused a considerable rise. Bee keepers are advised to analyze and consider thoroughly their correspondence with dealers, and to consign to the fire all such conditional offers and the accept-by-return-mail sort as well.

One of the greatest obstacles to be overcome, if better prices are to be realized, lies directly at the door of a goodly number of bee-keepers. To illustrate, one of our best bee-keepers, having sold his crop of honey early in the season, wrote an urgent letter asking me to send him a sample of a certain grade of honey and to quote price. In reply a price was named, not above current quotations, as it was not strictly a table honey in this market. The answer received was to the effect that he could not purchase at that price—that he thought he had sold out at too low a price, and that he would lose money by purchasing. That the crop was sold out early in the season, and the price established at a figure so low as to preclude paying the jobbing price to fill small orders, shows plainly where much of the trouble lies.

Hear ye, you bee-keepers who are producing fine honey and selling it retail at jobbing prices! can you not see that you are working an injustice to the whole fraternity without any benefit to yourself? for if you are obliged to or prefer to sell at jobbing prices, then you can get as much from the dealer, and you will be money ahead in the end if you charge the wholesale or retail price according to the classification of your customer, and the amount sold for what you dispose of in a small way.

You know that honey is nectar secreted in the blossoms of numerous plants, and gathered, stored, and ripened by the bees; that it is the purest and most wholesome of sweets; that it comes direct from the hands of the Creator, perfect in every particular, while all other sweets require the intervention of man, machinery, and usually the use of chemicals in their preparation for use; that physicians frequently prescribe honey for their patients, and deny them sugar and other artificially prepared sweets, which plainly shows that scientific men who know, regard the latter as unwholesome and injurious in many cases where the former is wholesome and beneficial.

Kenmore, N. Y.

Continued in next issue.

THE HIGH COST OF LIVING.

Too Many Retailers for the Number of Producers; Co-operative Selling.

BY OLIVER FOSTER.

The steadily increasing cost of living has aroused the people to such an extent that the problem is a national issue. Secretary Wilson has given some of the vital facts in the case. The corporations and trusts are not entirely to blame, though they are no doubt responsible for the failure of Congress to revise the tariff downward. This end of

the argument concerning high prices has been the subject of thousands of news, paper articles and editorials. What I say will not deal with this, but will be along the line Secretary Wilson took when he stated that the retail price of meat was thirty-eight per cent above the wholesale. The waste of time and effort in the small shop is very great, and should have the serious consideration of all thinking people.

The retail business in meat and groceries is tremendously overdone. The statement of commercial agencies, that ninety-five per cent of men in business fail is easily believed when one looks at the men who go into the grocery business because they have the mistaken notion that any one can keep store. Farmers, gardeners, tradespeople, etc., buy a stock of groceries for five or six hundred dollars, and proceed to embark in business. The unfitness of this class of men "to make a go" of retailing is shown by the statement when I approach them on the honey proposition: "Oh! we can't sell honey, for we never have any call for it." And no wonder. Their idea that business would come to them unsought shows why they can't sell.

The man who is a real merchant is always willing to give a little time to look into every proposition to see if there is a chance to *create a demand* for the article among his customers. If the goods are choice, such a merchant will display and push the line among his customers.

But most of the retailers are of the small variety, not having enough business to keep themselves, their help, nor their horse busy half the time. It costs just as much whether the ice box holds two tons of meat or only a few links of sausage; the ice melts just as fast, and ice costs money during the whole year. There are something like seven hundred retailers of meats and groceries in Denver. One hundred could do the work better at a great saving in operating expenses. To have the most economical methods in operation we need something like the public-utility corporations in charge of the retail meat and grocery business of cities. I do not think a large corporation in control of the retailing business would be likely to lower prices unless forced to do so by legislation, but the business would be carried on in a more sanitary way. The ice-boxes could be larger, and the order that comes out of system in management would give us better food.

The great number of retailers who are merely existing in the grocery business could more profitably join the ranks of the producers. The producers could very easily form co-operative associations with city stations for distribution. The lines that could be handled might include milk, eggs, cheese, butter, honey, and produce of all kinds. This is practicable now, as many creamery companies composed of farmers are selling all these kinds of farm produce from their city stations. As yet nothing has been done to bring about a more economical management in the distribution of meats and gro-

ceries; but perhaps when the farmers are selling the bulk of their produce through the associations they will launch into the retailing of these too, and will own their own packing-houses and also turn wheat at a dollar a bushel into breakfast food at ten cents a pound.

Denver, Col.

THE VALUE OF VISITING,

Some Good Ideas Picked up from Various Bee-keepers, and Passed on to Others.

BY F. GREINER.

The time of the year has come when we can give a little more attention to the theoretical part of our business. We have three ways: 1. Reading and studying; 2. Attending bee-keepers' conventions; 3. Visiting other bee-keepers. A great many bee-keepers do not avail themselves of all these means, particularly the last. In a conversation with some friend we can sometimes learn a valuable lesson, or start our thinking faculties in an altogether different direction with benefit to ourselves. By rubbing up against others I have picked up some good things of late, and I wish to tell the readers of GLEANINGS about it.

FRESH FOUNDATION THE EASIEST FOR THE BEES TO WORK; DIFFERENT METHODS OF PUTTING IN FOUNDATION.

By dear lessons many of us have found out that bees are loath to take hold of old foundation, particularly if it has been in the hives previously, and not drawn out. My aim has always been to procure freshly made foundation in the spring, and not put it into the sections till the honey season has arrived. The untouched starters in kept-over sections I always cut out and replace with the fresh article.

In talking with S. D. House, of Camillus, N. Y., I found that he had noted a great difference in the willingness of his bees to accept and draw out old as against new foundation; and his practice is to fill his sections with fresh foundation the very day he wishes to put them on his hives. If the conditions are such that the bees will begin to work on the wax at once, a great deal is gained, as all of us well know, and this is what Mr. House is aiming at. Bees are always more inclined to go to work on old foundation when placed in the brood-chamber; and the difference, he says, between the new and old article is not so apparent.

Before we had the Daisy or similar handy comb-foundation-fastening machines we secured the starters in the sections by dipping into melted resin, etc. We could clean and fill our wide frames (section-holders) with the made-up sections any time during the dull season when we had plenty of time. When we needed the supers, the starter could be quickly put in, handling the sections by fours. Since using the Daisy foundation-

fastening machine we can not follow this practice, and we therefore have no way of putting starters into sections by machine when said sections are in wide frames with separators nailed on the frames. If I understand it, the Root Co. is offering a wide-frame super in which the separators are a separate fixture. The Betsinger super, with its screen-separators, which Mr. House is using, is so constructed also. Such supers offer the advantage that they may be gotten ready during the winter for use in the apiary except putting in the foundation.

Mr. Betsinger's method for putting foundation into sections was as follows: His wide frame held three sections. This was placed upon a board to which were fastened three square blocks a little less in size than the inside of the section, and so spaced that the sections fitted nicely around them. These blocks were a little less in thickness than half the width of the section. The properly cut and well-fitting foundation was next placed upon the blocks and inside of the sections. With a little ladle some melted wax was dipped up, and with it the sheets were secured to the wood, allowing the hot wax to run along the top of the section as well as part way down the sides.

This process seemed to me a rather slow one. I also objected to so much wax being used inside of each section. Mr. House improved on the plan inasmuch as he fastens the foundation with a hot iron plate, *a la* Daisy, but without any machine. The iron plate is attached to a handle, the whole thing resembling a huge putty-knife. Several such are kept heating over a small kerosene-stove, and are changed as often as necessary. [This is just the principle of the Root foundation-fastener.—ED.]

We who use wide frames with separators nailed on, or also section-holders, must handle the sections one by one when putting in the starters or sheets of foundation, and after that we have to put them in the frames. Here we run into another snag. Sections do not always fold absolutely square, and are not rigid enough to admit putting in exactly fitting sheets of foundation. Mrs. Bacon, of Waterloo, overcomes this by cutting her foundation sheets slightly bias, or just a little narrower at the bottom of the sheet, using a pattern to cut by. I would make a miter-box so that I could cut 12 or 15 sheets at one operation. Of course the strips of foundation would have to be of just the right width, or about $4\frac{3}{8}$ inches wide for the 4x5 sections. I think I shall practice this plan if I ever use full sheets of foundation in my sections.

THE PUTTY-KNIFE FASTENER.

The House method of using the putty-knife-fashioned plate instead of a machine commends itself for several reasons to those whose super fixtures admit of such a plan. When putting in starters or full sheets with the Daisy we have to work very lively. A section must not be left on the machine a moment longer than is necessary to operate the hot plate. Sometimes the foundation

becomes warm and limp before we can go through with the operation. This gives us trouble. Such does not and can not occur when we practice Mr. House's method. We may leave the sections on their form any length of time. In fact, it is a good idea to use several forms and leave the sections after the starters are put in a little while (long enough for the wax to harden) before taking them off.

One may also employ inexperienced help. An eight-year child may put the wide frames on the forms and drop the sheets of foundation while the experienced hand attends to the work of fastening the foundation with the hot plates.

A SOLAR EXTRACTOR WITH A LAMP IN COMBINATION.

When visiting my brother, G. C. Greiner, last fall I noticed his solar wax-extractor. It was built on the Doolittle solar plan with some alteration. A fine-meshed screen was supported just over the iron bottom, upon which the comb to be rendered was placed. Under these conditions it was found that old Sol did not have power enough to do a thorough job, and so he added a lamp to the outfit, thus making it complete. With this machine he secures good-sized cakes of fine wax which do not need recaking. However, he uses only cappings in the machine, and they are first washed free from all honey, and then dried.

WHAT IS THE NEED OF A HONEY-STRAINER?

Among other subjects discussed at this meeting was the honey-strainer. I asked him where his honey-strainer was. (I mistrusted that he had not observed or did not appreciate the great (?) progress that had been made in that line.) Without a word he pulled a glass jar of honey from a crate at random and held it up to the light. The honey was water-white, and most beautiful. Not a speck nor an air-bubble was in it or on top of the honey. "Has any living man or woman ever produced any thing finer than this with any strainer that you know of?" he asked.

"I think not," I answered.

I had to acknowledge that a great deal of energy seemed to be uselessly expended in building complicated honey-strainers and putting honey through them with no visible effect or the slightest improvement over honey not strained but simply drawn through the faucet from the bottom of the tank. If the tank is narrow and tall, nearly all foreign matter can be easily removed with a spoon when it is full. Some honey will be dipped up at the same time; but if we put the skimmed matter into a pail, after a little time the larger part of the honey may be poured out by holding the pieces of comb, scum, and sealings back with the spoon. A better way would be to use a small tank having a faucet at the bottom. After all the skimmed matter has been collected in this, and after giving time, about all the honey could be drawn off.

I have strained my honey through a cloth,

but never obtained a perfect article. Metal sieves can not do better. In fact, it is an impossibility to free honey quickly from the very fine particles of wax which it always contains. A little time does it. Honey drawn from the faucet at a summer temperature flows easily and without even leaving air bubbles on the surface. I fail to understand why such men as Mr. Alexander, for instance, recommend straining honey. That portion of honey which is drawn from a tank last, no matter whether a strainer has been used or not, is not fit for bottling. The tailings of several tanks may be run into one small tank and given a little time to clear. In the end there will be very little left but what is fit for bottling.

A BETTER MILLER FEEDER.

An improvement in the Miller feeder was suggested to me by W. F. Marks. All who have used this feeder have undoubtedly observed that there are times, particularly when the hive is not leveled perfectly, when a little of the syrup is inaccessible to the bees. Let the feeder be so made that the bottom inclines to the center just a trifle. The bees can then take out the very last drop.

FINDING QUEENS IN LATE FALL.

There seems to be a feeling among quite a number of bee-keepers that purchasing queens in the fall is not advisable. Some expressed themselves in strong terms, saying they did not want late queens as a gift. The fact is, it is any thing but a pleasant job to take a colony apart in order to find the old queen. The bees are cross, therefore difficult to keep in subjection. The combs are heavy, and are often set to leaking, thus attracting robbers. Mr. House offers this solution: Drum or drive the bees into an empty hive-body placed on top of the hive containing the colony to be dequeened. When the bees have clustered they are dumped out in front of their hive after adjusting an entrance-guard. The queen is thus found easily, no honey set to leaking, etc., and the new queen is then introduced or run in as is thought best.

Naples, N. Y., Dec. 18.

[We believe it is generally acknowledged that fresh super foundation is more easily worked than that which is a year old. Some discussion a few years ago seemed to show this quite plainly.]

As to whether extracted honey needs a strainer depends on conditions. We have been in quite a number of large extracting-yards where honey was produced by the carload; and many (if not a great majority) of those big producers use honey strainers and settling-tanks both—a strainer to catch the larger particles, like slices of cappings, brood, and drowned bees, and a settling-tank to remove the finer particles that can not be secured in any way but by the force of gravity. The strainers undoubtedly do save time in that they catch the great bulk of foreign material that would go in with the honey; and where said honey is conveyed quite

a distance through a tin conductor, a strainer is indispensable. Many producers, to save handling, do use such a conductor from the strainer to the settling-tank. You will remember that Mr. Alexander conveyed his honey from the extracting-house through a tin pipe on a slight downward grade to a large tank some distance away. As he produced mainly buckwheat honey, or buckwheat mixed with aster, a dark honey like this does not need a settling-tank nearly to the extent that a light honey does.

Queens reared late in the summer or early fall may not be the equal of those reared early in the season; but there is no reason why they *may* not be just as good, providing the cell-building colonies are fed liberally during the time when the cells are being supplied with royal jelly. But this is not all. Liberal feeding alone will not produce strong vigorous queens. A colony *must* be put into condition where it will be queenless and broodless—that is, fairly cry* for a queen before it will do its best work in cell-starting and cell-building. An up-to-date queen-breeder who knows these tricks of the trade can, if he chooses, furnish just as good queens in late summer as during the early part of the season; but the probabilities are that the average queen-breeder does not furnish late-summer stock that is equal in every respect to that which is reared earlier when conditions naturally are more favorable. It is too much work.—ED.]

DO BEES STEAL EGGS?

Laying Queens that Developed from Stolen Eggs.

BY E. C. FRAZIER.

On page 780, Dec. 15, I find some assertions made by Mr. Samuel Simmins, with which very few practical bee-keepers of America will agree. I am very certain that at one time I knew of bees stealing eggs. Of course I did not see the act accomplished, but I will explain.

In the year 1879 I lived at Sacramento, McLean Co., Ky., the first time I tried to use movable frame hives. I first bought a farm right to make and use the N. C. Mitchell "Long-idea" movable frames. I made my own hives and frames, and, what a fit! and, of course, being green, for I had never seen a comb transferred, I mashed bees, combs, and a queen. I transferred five hives for myself that season. I killed one queen in transferring, and knew when I did it. In handling the comb I mashed her accidentally; and when I ran the bees into the new hive I dropped the dead queen down between the

frames of comb. The next morning she was pulled out on the alighting-board. Those were the brown German bees.

Mr. Mitchell taught in his books that, if there were eggs or very young brood, the bees would raise a queen; but these bees did not do it. I left the colony alone for some time, as it was very strong. In the meantime I had sent for two pure Italian queens. When these came I clipped them and introduced them in two of the hives, and in due time I had Italian bees flying from both hives; and now comes the strange part to me. The colony whose queen I mashed was dwindling. I examined it and found all the brood hatched with the exception of some drone brood in worker cells. I closed the hive after looking through it, and examined the rest of the hives that day; but in a few days I went back to the queenless hive and opened it again; and, imagine my surprise when, on the edge of a comb, I found a fresh queen-cell about half-finished with royal jelly in the bottom, and a young larva floating in the jelly. I hastily closed the hive and beat a retreat in double-quick time, as I had no veil or gloves.

Surprise No. 2 came in about three weeks. My father was at my house, and we were out looking at the bees, when he said: "Ras, you have a fine queen in that hive; look! Isn't she a beauty?" And she was as pretty an Italian queen as one would wish to see. She had come out to mate. In about 20 minutes she alighted on the alighting-board and went into the hive with a white-looking thread attached to her.

About a month after that time, father and I looked into the hive where we saw the young queen enter, and there were several young Italian bees crawling over the combs, and a nice lot of brood, capped and uncapped, and eggs in the hive. I told father about the hive being queenless, and he said, "Oh! they stole an egg from one of the other hives; they sometimes do that."

The two Italian queens I bought were the first and only ones brought into that country at that time and for some time after.

I wish to ask Mr. Simmins and other bee-keepers some questions:

Did you or any other practical bee-keeper ever know or hear of the eggs of a laying worker hatching any thing but a drone? Mr. Simmins says, "I can see no other possible explanation than that laying workers are responsible." Now, I have taken the young larvae from as many as half a dozen queen-cells, and replaced them with eggs of the laying worker, and all from one cell, and drones developed in them every time. The experiment was tried on a hive that had cast a prime swarm two days before, while I have tried the same experiment three or four times with the same results. A bird or fowl of the female sex can and does lay eggs without the male; but all know the eggs will not hatch; but the laying-worker bee can and does lay eggs that hatch drones; which, however, are useless because they can not fertilize a queen-bee. If any one thinks they can, let him winter a hive or two of them

* By this we mean put up a roar of distress—distress for what seems to be a hopeless condition. When a bar of freshly grafted cells is given, their chyle-secreting glands being surcharged because there has been no brood to feed, they immediately jam the cells with chyle food. A well-fed baby has an immense advantage over one that was poorly fed at the start, whether it be an insect or animal.

and try them with virgin queens in the early spring before any other drones begin to fly. I have tried this experiment twice, but have failed to get a single queen fertilized.

Adams, Tenn.

PURE STOCK VS. HYBRIDS.

Is it not Better to Breed from the Best Colony in the Yard, Irrespective of Race?

BY FRANK C. PELLETT.

Inasmuch as my experience with the Italian bees has been so different from that so often expressed in your columns, I feel impelled to offer a word in favor of the hybrid. Every one seems to have the idea that the only thing to do is to Italianize and keep only pure bees, or as nearly so as his locality will permit. I am inclined to the opposite view. With about one-third of my apiary of the yellow bees, they have not, so far, proved as satisfactory as the darker ones. Fifteen of the queens originally came from a breeder well known, and one who, being a regular advertiser, probably has sold queens to a large part of the readers, so we feel sure the fault can not be with the strain. However, not all the queens came from him, and we can see no appreciable difference between those queens (or, rather, colonies) and the other yellow colonies.

There has been much said in these columns about the gentleness of the Italians; but the crossiest colony we have are yellow bees; and the gentlest (or as gentle as any) are dark hybrids. Do not understand me to say that all our yellow ones are cross, as some are not; but we have no dark bees that will come as near driving the whole outfit out of the yard as the above mentioned colony of yellow ones. Then the best honey producers we have are hybrids and they make the cleanest combs with less propolis and less brace-comb. We can take off a super and feel pretty sure that none of the combs are fastened to the separators. The worst bees to daub propolis over the sections and attach the combs to the separators are in almost every case among the yellow ones. The most expensive queen we ever had was a failure excepting in the color of her offspring. They were unusually yellow; and if beauty is worth any thing she was worth the price; but the colony finally died late in spring from dwindling. There is only one thing that, in my experience, has been in favor of the pure Italian; and that is the ability to resist the bee-moth, which they seem to be able to do better than the darker bees.

MOTHS DESTROYED THE EMPTY COMBS.

Speaking of the bee-moth leads me to tell some more experience. Last winter we purchased a number of colonies of bees that were short of stores. These we fed until after fruit bloom, when they had quite a little honey on hand, and we supposed them safe for the season. However, June was

cold and wet, with hardly a day when the bees could get out until the last week in the month, and, before we knew it, our colonies were dead. As we run only for comb honey, surplus combs are rare with us, and we had read somewhere that, if placed two inches apart, the moths would give no trouble; so we took a lot of empty hives and put in occasionally a comb between empty frames. We lost the whole lot. Had we been a little more careful to look after them, and placed them over our yellow bees, we could have saved the combs.

From our experience we have decided that, instead of requeening with pure Italian stock, it would be better to do so from the best all-around stock in the yard, regardless of color, race, or origin. There have been so many Italians introduced into this section that it would be difficult to find any of the black bees not more or less mixed with them.

Atlantic, Iowa.

SETTING BEES OUT OF THE CELLAR.

The Effect of the Wind on the Drifting of the Bees.

BY E. D. TOWNSEND.

In a Straw, June 15, 1909, Dr. Miller says: "It may be that 'if there happens to be a heavy wind it is liable to force the bulk of the flying bees toward the leeward side.' I don't know. I never took bees out in a heavy wind. I couldn't be hired to do so."

I understand perfectly, doctor, that you never took bees from the cellar during a windy time or you would not have left the impression in the foregoing that bees drift to the leeward in their first flight after setting out of the cellar, especially if they have not wintered well.

Many bees leave their hive without any apparent thought of returning; or, in other words, they do not mark their location. In this case, if a heavy wind is blowing it sometimes seems as if nearly all the bees in the air are being blown off to leeward; and one would think they would surely enter those hives where the bees are flying so thickly. They won't, though. It is something like this: As the gust of wind lets up, the flying mass of bees will hover around the row of hives at the leeward side of the yard. They actually expect (according to their actions) to enter this leeward row of hives. However, as they hover in front of this row the "homing hum" is blown away from them, and the bees hear only the call of the bees in the hives to windward and they fly over to this next row only to hear the hum or call of the bees entering the hives further on to windward. This moving over to the windward is continued until the throng is drawn over to the windward side of the yard. The *windward* side, not the leeward, then, is more likely to draw more than the proper share of bees.

Remus, Mich.

MODERN APICULTURE IN MEXICO.

BY CARL LUDLOFF.

From "Mexican Industries," Monterey, N. L. Translated from the Spanish by Geo. W. Dithridge.

At a time not far distant the art of modern apiculture will be one of the most important branches of agriculture in the republic of Mexico. Up to the present time this industry has been carried on in an antiquated manner, generally by the Indians, as a business exclusively in the hot zone of this country, while in the more elevated temperate regions it is regarded as a diversion wholly without a business prospect.

The cause of this apicultural situation is that the tropics in general produce a class of honey suitable only for exportation, and used principally in the great industries of the countries of the North; but rarely does one encounter a quality of honey appropriate for the table, while the wax, secured by the crude methods employed, is of much greater value than the honey. It is to be inferred that even modern bee-keepers have not been disposed to improve the ancient methods, nor to establish their colonies on modern scientific principles.

On the other hand, the very remarkable and singular conditions of climate in the temperate and cold zones of Mexico up to to day have rendered it almost impossible to protect the bees in any known hive. It is considered to be not only certain but beyond remedy that the colonies of bees are to dwindle to almost none, or to disappear entirely during the winter season; and bee-keepers are obliged to commence almost entirely *de novo* every year with the remnants of their colonies. This is the reason why extensive bee-yards are unknown in this region, those of from ten to forty hives being considered rare exceptions. The yards, as a general rule, contain no more than from one to five colonies, usually in a most deplorable condition. That such a style of bee-keeping can offer no inducement to any one to waste time, labor, and money in it needs no assurance or explanation. But the honey produced in this zone is of such excellent quality, and the quantities gathered by the bees so great, in spite of every obstacle, that it remains only to discover a method of management to render it possible to develop apiculture to a state at least equal to that of other countries. Such difficulties have been wholly overcome elsewhere.

Before discussing this question it seems necessary to limit ourselves to the consideration of good honey and of inferior honey. The zones of these honeys are found at certain elevations above the sea. Commencing at the ocean or gulf shore, the inferior honey is found to a height of 5000 feet, corresponding to the region adapted to the cultivation of sugar cane. In this region the life of the colonies is irregular because of the issue of swarms at any time of the year, more or less, and this appears to be the principle object of bee energy. The accumulation of

honey is an object of secondary consideration, because the bees are accustomed to encounter it in abundance at all times. They have neither time nor inclination to accumulate quantities of honey. This is well enough, but it is not exactly what we want.

From the zone of sugar-cane culture, divided by an inclined plain of several hundred feet of elevation, being the transition zone, which is the habitat of the maguey or pulque plant (*Agave Americana*), commences with exactness the zone of fine honey. In this region a plant known by its Indian name of "chayotillo" (*Scisios edulis*) is found in vast numbers, blossoming in the rainy season. At the same time, there is also found in this zone a plant of the family *Cucurbitaceæ*, and this is the appropriate Mexican plant for honey. In every locality where this plant is in abundance, apiculture may be regarded as a sure and certain business. In addition to the chayotillo, the mesquite trees and shrubs yield in the beginning of spring a splendid harvest of honey. The honey of the chayotillo belongs in the highest grade of honey known in all the world, and surpasses the famous honey of Colorado and California. On this account apiculture in this elevated section of Mexico should be esteemed a very remunerative business, but only by the use of hives and strains of bees entirely adapted to the climate. This subject will be considered further in the March issue of this journal.

Vencedora, Chih., Mex., April 30, 1909.

THE BULK OF THE HONEY COMES FROM WITHIN ONE MILE OF THE APIARY.

There is some discussion in the bee journals of late as to how far bees go for pasturage; and I agree with those who claim that most honey is gathered within one mile from the apiary. I have an outyard which is about three miles, at least not exceeding $\frac{3}{4}$, from my home yard, and I have more than once secured a fair honey crop there while I got but little honey in my home yard.

WALD C. CONRADS.
New Braunfels, Texas, Oct. 20.

STRONG QUEENS FROM TWICE-GRAFTED CELLS.

Noticing the article, page 763, Dec. 15, on breeding strong queens, by J. W. Savage, I will endeavor to relate my experience. On the 10th of June, 1909, I found two colonies that had small queens. They looked like runts or as though they were half starved. I experimented by removing the queen from one of them, and in a few days I examined the colony and found six queen-cells about $\frac{1}{4}$ inch long. I removed the larvæ, putting in their places younger or smaller ones, and trimmed the cells back so they were not over a third as long. Before putting in the next larvæ I smoothed the royal jelly down with the ivory tip of a leadpencil. In two days I examined and found the bees were working on the grafted cells and putting royal jelly in them. I removed the other small queen from the second colony and grafted one cell in that hive. The result was two strong and fine-looking queens; and it did me great good to see the colonies grow to two strong ones. One colony produced 186 lbs. of first-class honey, and the other 158 lbs.

My experience proved beyond doubt that the Nektart and Perkins method is all right, and our thanks are due to Mr. J. W. George for bringing it before the public. I tried almost the same method fifteen years ago in Washington, but did not trim the cell back, and did not have as good success as this time. The two colonies mentioned belong to Mr. J. B. Perrine, Blue Lakes, Idaho.

Jerome, Idaho.

S. F. BAILEY.



THE CHIEF INSPECTOR OF INDIANA LOOKING FOR FOUL BROOD.

INDIANA'S FOUL-BROOD LAW.

Some Figures Showing the Excellent Results from the First Year's Work; Some Amusing Incidents Connected with a Foul-brood Inspector's Work.

BY WALTER S. POWDER.

Our new law placed the work of inspecting apiaries in the hands of our State Entomologist, Mr. Benjamin W. Douglass, and the work required from his office takes in a wide scope. Mr. Douglass appointed Mr. George S. Demuth, of Peru, Ind., as chief inspector of apiaries, and where required deputies were appointed. Much valuable work has been accomplished; but when we scan the figures which will appear in the annual report we realize that Indiana did not take the work in hand any too soon.

We recently asked Mr. Demuth for some statistics on the first season's work, and he informs us:—"During the season some inspection work was done in each of twenty-two counties. A total of 513 visits were made, and 480 apiaries were visited; 6036 colonies were inspected; 1431 of these were diseased. Of the 6036 colonies inspected, 328 were in box hives and 213 were in frame hives from which combs could not be removed on account of being built crosswise. Some of these were even in 'Pouder's Best,' but I presume the owners' wives had appropriated for her flatirons the foundation which you sent along; at least there was no evidence of any having been used in the frames."

We then asked Mr. Demuth a number of questions, the answers to which, together with the questions, are as follows:

"Do you find hives and combs exposed to robbers in which the bees have perished?"

"Yes. In addition to the 1431 diseased colonies, 495 hives were found from which the bees had died of foul brood and were left exposed to robbers. In many cases robbers were found at work on these combs when the inspection was made, as colonies continue dying during the entire season. In the 495 hives the characteristic scales of American foul brood were discovered. Many other hives of combs were found exposed to robbers, but only those known to contain disease were counted in the 495. The 495 hives were not counted in the 6036 colonies inspected. These hives and combs were promptly burned before leaving the premises."

"Have you found it necessary to destroy any living bees where owners failed to comply with the specifications of the law?"

"Fifty-eight colonies of bees, hives, and combs were burned during the season. No bees were burned unless the owners absolutely refused to treat them."

"Have you met with any difficulties or unpleasant features in enforcing your instructions?"

"A few peculiar features developed from time to time, but they were more of a humorous nature than unpleasantness. I recall having wasted a valuable half-hour in trying to convince one man that we had a legal right to inspect his bees, and that each colony

would not hie away to parts unknown, or would not wither under our deadly touch, and shuffle off to the happy hunting-grounds. I was so indiscreet as to intimate that we would inspect the bees any way. At this the man burst into a mighty wrath, and, stretching his 'six-foot-two' to its full height, he remarked, 'I fought three years to save my country, and I shall fight three more to save my bees.' I took this as a signal to begin work, and immediately pried the super from the nearest hive and began removing brood-frames. The soldier

was so surprised that he only pouted like a child. On one occasion I had to burn some bees in a certain locality, and a few weeks later I happened to be in the same place, when, to my surprise, I learned that the farmer bee-keepers had heard of the awful man who went about as a roaring lion burning peoples' bees; and so, in order to save their honey and wax, they were actually killing their bees and rendering the honey and wax so the "awful man" wouldn't burn them. This happened in a neighborhood where no inspection work had been done whatever, and the bees were probably healthy. One man, whose bees were badly diseased, refused to treat them, so we went to destroy them. The owner came at us with a big butcher-knife, whisked it about my face, and informed me that if we killed his bees we must first kill him. That looked like a rather large undertaking; so we brought the town marshal to watch the knife

while we had our backs turned doing the work. So far as I know that knife is still innocent of human blood."

George S. Demuth was born near Peru, Indiana, reared on a farm, and has kept bees since he was a mere boy. Like other bee cranks



MR. DEMUTH'S HOME IN PERU, INDIANA.

This home was built with one season's profits from the bees.

he has eagerly devoured every thing he could get hold of on the subject of bee culture, and has spent considerable time and money in experimenting. He is quite thorough in microscopic work, and is an expert photographer, which is of much benefit in his present work. He owns and operates three outyards, a total of 200 colonies, all run for comb honey, using an automobile in visiting the different yards. He is the only one whom I have personally known to practice migratory bee-keeping successfully. By moving a carload of bees to the marshy regions for the fall flow he has secured excellent results; but the system had to be discontinued on account of foul-brood appearing in those regions. Since foul brood is to be eliminated, the practice will likely be taken up again.

He spends less time now on three yards than he formerly did on one; and while this has been his poorest season, the time required shows a fair profit. His best season was that of 1903, when he built his beautiful home from the proceeds of his apiaries for that one season.

During the cold months Mr. Demuth is kept busy inspecting nurseries and nursery stock, and much other work emanating from the office of the State Entomologist. The educational work which is being accomplished in favor of the bee industry is bound to have a telling effect. At our State Fair Mr. Douglass exhibited specimens of foul brood in glass cases, showing the disease in its different stages; also a half-starved swarm of bees clustered on dead-ripe grapes, and other interesting exhibits of bees which were in charge of Mr. Demuth. The lectures attracted large crowds.

Mr. Demuth's lectures before institute meetings, with his lantern-slides, are being spoken of as models of perfection. Prior to his appointment as Chief Inspector of Apiaries he had been employed as one of the professors in the city schools of Peru. It was an instance of "the office seeking the man,"



GEO. S. DEMUTH, PERU, IND.
Chief Inspector of Apiaries in Indiana.

and the work accomplished is certainly a credit to the Hoosier State.
Indianapolis, Ind.

[Indiana is certainly to be congratulated on having so efficient an inspector. One who knows his job and how to handle these ignorant bluffers and cut-throats, like Mr. Demuth, should be and probably will be retained in service.—Ed.]

BEEES IN THE GARRET.

One Colony in a City Averaged 75 Pounds of Comb Honey for Eleven Years, and did Not Cast a Swarm.

BY CHARLES STEWART.

Bee-keeping is classed among rural industries; yet it is not necessary to live in the country or even in the suburbs or in a village to taste the pleasure of the pursuit, for it is a genuine pleasure—it is even more; it is a delightful and seductive charm; and for the city man who retains many of his original illusions and all his love for the simple life of rural industry, keeping bees is the least depressing method of being "stung." A whole lot of enjoyment (and, incidentally, 50 or more pounds of honey) may be had from a single colony of bees in the most populous residence district of almost any city in that wide belt extending east and west, perhaps, from Montreal, Can., to the Gulf of Mexico. The place to keep the colony is in the garret, and a good time to make the start is during the swarming season.

Several years ago the writer's attention was first called to a colony of bees in the garret. No, they did not disturb the neighbors, for the neighbors did not know they were there. Since that time many others have come under his observation; and with all of them the result has been substantially the same. In no case do they require much care; and the rule is, *they do not swarm!* While the rule is not "iron," the exceptions are very rare. To the writer's personal knowledge, a colony that has been kept eleven years in a garret never swarmed; and during that time it averaged more than 75 lbs. of section honey annually. This is (for the colony is there yet) in the residence section of a city of about 20,000, the princely home of a retired oil and glass capitalist. The same man has also a colony in the attic of his stable where he keeps a few high-bred driving horses. The colony in the stable is on a shelf, or platform, at a slatted ventilator which affords the bees ingress and egress. It has been there nine years, and never yet has swarmed; and the honey produced has averaged about the same as the colony in the garret a few rods away.

Of the many other colonies of bees kept in garrets, only one instance has come to the writer's knowledge of their having swarmed. You can put a colony in your garret;

and if it has sufficient hive room, the chances are a hundred to one the bees will not disturb your neighbors nor dissipate your expectation of a honey-yield by swarming.

As good a hive should be used as though it were to stand out in the weather; and producing honey in a small way with one or at most only a few colonies, where extracting-outfits would prove impracticable, the hive should be suitable for the production of comb honey. True, shallow extracting-frames might be used instead of sections, and the honey cut out for use as "chunk honey," but it is not tidy nor neat, and in a short time the "proprietor" of even a single colony will experience a pardonable pride in having his bees produce as nice "section honey" as any to be seen anywhere. No mistake will be made in choosing the Danzenbaker hive. It is the comb-honey hive *par excellence*. Your colony in the garret, with abundance of winter stores, will build up to enormous strength early in the season and have a mighty army of bees to garner the crop of nectar from every source. They will need an abundance of hive room; and the Danzenbaker hive, being both a shallow brood-nest and a ten-frame hive, presents an admirable foundation upon which to tier up supers for surplus honey without fear of top-heaviness. The statement already made, that the average, in confessedly poor localities for honey-gathering, has been about 75 lbs., should not mislead; for in exceptional years the yield may be double, triple, or quadruple, and there should be supers enough on the hive for any contingency.

Toledo, Ohio.

ANNUAL CONVENTION OF THE EASTERN NEW YORK BEE-KEEPERS' ASSOCIATION.

The second annual convention of the above association was held Dec. 8, in the chambers of the Common Council, City Hall, Albany. The President, W. D. Wright, called the meeting to order. At the call of the roll of 53 members, only 20 responded. The minutes of the previous convention, held at Catskill, were read and approved. At the collection of dues, 20 members paid their dollars.

A motion was adopted making all dues payable from Jan. 1 of each year.

The President presented an interesting and entertaining address. The annual election of officers resulted as follows:

President, W. D. Wright, Altamont.
Vice-president, T. D. Mower, Athens.
Second Vice-president, A. L. Fisher, Central Bridge.
Secretary, S. Davenport, Indian Fields.
Treasurer, M. A. Kingman, East Greenbush.

The President, W. D. Wright, and Secretary, S. Davenport, were elected delegates to the annual convention of the New York State Association of Bee-keepers' Societies. The Secretary suggested the propriety of taking a statistical report from members relative to their bee-keeping and its results; but on soliciting the same some discussion developed much opposition, and the subject was laid on the table.

Geo. B. House, Black River, and Irving Kinyon, Camillus, delegates to the State convention, also Alden Hilton, Schenectady, made extended remarks on interesting topics.

The time of the convention was mostly taken up with routine business, as it was to be followed in the afternoon by the convention of the New York State Association of Bee-keepers' Societies.

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in number and quality were larger than all
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ROBBER-TRAPS.

How Constructed; When and How they Can be Used.

BY E. R. ROOT.

We have been using in our yards, for some years back, various forms of robber-traps. Their purpose is to catch the hardened "old sinners"—bees that are professionals in the art of robbing, and which are of but little practical value for the purpose of getting honey honestly from the fields. As we have before stated in these columns, we catch these shiny-backed bees and kill them. While some protest has been raised on the ground that they might be made over into a colony, yet the kind of "old sinners," to which we have referred are useless for *any* purpose. In a queen-rearing yard the sooner they are out of the way the better for all concerned. As long as they are allowed to prey on their honest neighbors they will *continue* to make work in the yard disagreeable by keeping every colony stirred up and more or less cross, despoil baby nuclei, and make trouble generally. But this is not all. They incite other bees to rob. The force of example is very potent among bees as well as human beings.

A short time ago Mr. Holtermann, in his department, facetiously remarked that any man who would use a robber-trap ought to be "trapped" himself—implying, of course, that such a device is a useless contrivance in a well-regulated apiary. As we later pointed out, robber traps are almost indispensable in a queen-rearing yard. While one does not need to use them continuously, they are required on occasions; for if a few bees once get started to robbing they will day after day pounce on the combs every time a hive is opened, and render life miserable for their owner and for the baby nuclei. Time and time again in our yards we have restored every thing to absolute order and quiet by the use of the trap. It works like magic; and after the rascals are caught, one will be surprised to note how few bees can make such an uproar as is evidenced by the number in the trap. Their intrinsic value is practically nothing, even if they were good honest bees. To let them loose would only invite more trouble. The amount of honey that they might gather if they could be "reformed" would be a very insignificant item. But the amount of damage that they can do in interfering with our

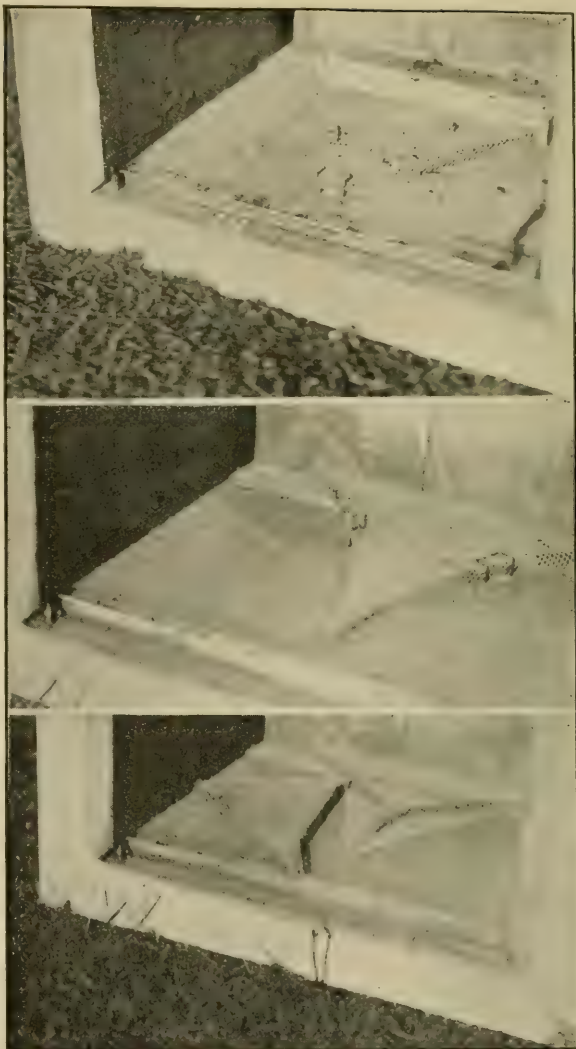


FIG. 1.—Wire-cloth-cone bee-escape on the inside of robber-traps. Note that the large end of the cone communicates with the regular entrance of the hive. Robbers pass in at the entrance up through the cone into the hive and are caught.

queen-rearing operations is no small item. But Mr. Holtermann comes back and says that, if a robber-trap will catch robbers, it will also catch *honest* bees, and why destroy good property? There is no need, Mr. Holtermann, for catching any thing but the hardened old sinners—those that we consider hopeless beyond redemption. As explained, we do not run the trap continuously throughout the season—perhaps one or two days in a week, and not even then if no robbers show up. During the entire season at our home yard of 400 colonies and nuclei the total number of robbers that we catch would hardly fill a two-gallon measure; and we venture to say there was not one honest bee out of five hundred in the whole number.

How do we avoid catching honest bees? Easy enough. The traps are put in operation only when the prowling thieves are around. They are constantly on the alert, skilled as they are in the art of stealing and in finding any exposed sweets; that is to say, they are ever following one about, while the honest bees are either in the field or hive.

Let us assume a case. After we have been working in the yard a few days there are a few robbers that accumulate. But we do not let them continue on with their nosing into other people's business till they make work in the yard exceedingly disagreeable, and the colonies that are being worked cross. Before they become very numerous, two or three robber-traps are put into operation; and in an hour absolute peace is restored and not a prowler is in sight.

The value of the trap depends on the fact that it stops a would-be bad case of robbing *before* it has progressed to any extent. A little syrup (and a very little) is put into one or two traps. The robbers, because hunting for sweets, are caught *long before* any honest bees think of looking for it. If Mr. Holtermann will try the traps he will find there is no need for catching honest bees. If he does *he* ought to be "trapped."

CONSTRUCTION OF ROBBER-TRAPS.

Let us now look over one of these traps at the Root apiaries and see how they are constructed. An ordinary hive, such as is used in the yard, two wire screens such as are employed for moving bees, a super-cover, and a wire-cloth-cone bee-escape, make up the complete outfit. (The ordinary Porter spring escapes for this purpose have not been found to be as satisfactory as the wire-cloth cones.) We open up the robber-trap hive, and just over the entrance of it we find a wire-cloth cone tacked up against the inside hive-front. This is made by cutting and folding a piece of wire cloth in the form of a triangle. The large end fits over the en-

trance, while the other end, gradually tapering to a small orifice (about $\frac{3}{8}$ inch square), reaches nearly to the top of the hive, or within an inch of the rabbet on which the frame-rest; it is then secured by double-pointed tacks as shown at the top of Fig. 1. As an additional precaution we find it desirable to have a smaller wire cone of the same construction under the larger one. Where there is only one cone the bees are liable to go back out through the entrance. Other forms of cones are shown in the two lower views of Fig. 1.

One of these traps is placed at a convenient location in the yard, when one of the wire screens for moving bees is laid on top. With a brush we smear a little diluted honey (honey is better than syrup) over the wire cloth at one end—the back one. This film of honey is spread over an area of about two inches wide by the width of the screen. Another screen is placed on top of this, and over the whole is placed a super cover as shown in Fig. 2. Notice that this super cover is set back about two inches, leaving a portion of the wire cloth—the part smeared with honey—exposed where the bees can get a *smell* of it, but not touch it, because the upper screen keeps them from it. Now, a robber-bee, if a hardened "old sinner" or a professional, when it smells honey in this way will immediately begin to "investigate." It will hover around the wire cloth (not covered by the super cover) for a minute or so, and then, like a duck to water, it will make a dart for the entrance. There are no guards there to stop it; it rushes in pellmell, crawls up through the two wire-cloth cones shown in the previous illustration, and out through the apex, when it is a prisoner. It may take a sip of the honey, and when it gets its fill it will go toward the light at the point where the super-cover is slid backward. The chances are only one in a thousand that it will get back through the wire-cloth cones

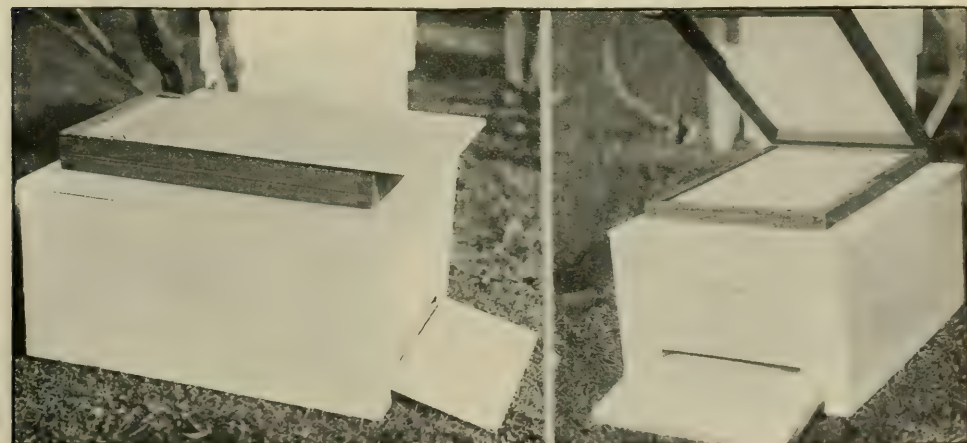


FIG. 2.—Outside detail of the robber-trap. A double screen is used, and honey is painted on the inner screen. Robbers are attracted by the odor of the honey. As they can not reach it from the outer screen they enter the hive and are trapped.

as mentioned, and it soon worries itself to death. Thus the trap works after it catches all the criminally inclined bees. The small amount of diluted honey on the inner wire cloth is used up, and automatically the robber-trap goes out of commission. The old sinners are all caught; and as there is no more honey to attract honest bees, Mr. Holtermann will see that none are caught.

In this way the few prowling robbers that may accumulate in two or three days are caught and automatically disposed of. They either starve or worry themselves to death.

Some years ago, when Mr. Wardell worked for us, it happened that one of his men left the door of the honey house open. That was in the days before we had robber-traps, and when robbers would be prowling about during the entire season. On this occasion the robbers rushed in pellmell. When the robbing was at its height Mr. Wardell came into the yard, and what did he do? He shut the door, then shortly after he went in and killed the whole mass of bees clustered on the screen. In explanation of his action he said we could not afford to have those bees go back to their hives and bring on an onslaught of hundreds and perhaps thousands of other bees. He thought it more economical for the Root Co. to kill the first lot rather than to let them loose.

In pursuance of the same principle we later on devised robber-traps. They were first used by Mr. Pritchard at our north yard, and, later, put into commission at the home yard by Mr. Bain. They have been doing splendid service at both apiaries; and that their use is not wasteful of bees is shown by the fact that two gallons of bees will comprise all the robbers trapped in a whole season in an apiary of about 400 colonies and nuclei.

The question may arise right here, "Is the robber-trap of any use to the honey-producer?" Certainly not to the same extent that it is useful in a queen-rearing yard; but during a period of extracting, there are times when it appears to us it might be used to good advantage, especially if some careless employee should happen to leave the door of the honey-house open or allow a colony to be robbed to death.

As we have before pointed out, if robbers can be caught at the very start they will be found to be mainly from one hive, and a little later from two or three. If they get well along they will attract other bees by their uproar; but if robber-bees be floured, and

followed back to their hives, it will be seen that the great bulk of them go to only two or three hives. A yard man has to be exceedingly careless to allow robbing to get started throughout the entire yard.

THE BEE-LOUSE.

A Pest Found in the South of Continental Europe and other Parts of the Orient.

BY MANUEL ARRUDA PONTES.

Dear Sir:—Enclosed you will find a package with 30 insects in a small box, and 3 bees in a small bottle, showing how these insects attack the poor bees. I don't know the name of this pest

Fenaes d'Luz, Azores.

[We will explain that we received this bottle of bees some time ago. On examination we found that these vermin are what is known as the bee louse (*Braula ceca*). The bees sent in alcohol could not be photographed, of course; but we attached one of the insects to the thorax of an ordinary Italian bee, as nearly as possible in the position of those fastened to the bees in the bottle. It is interesting to note, in this connection, that the long fine hairs on the thorax of the bee, which do not show, even in the enlarged photograph, prevented us from getting the *Braula* down close to the thorax. Of course, if the insect had been alive it could have "burrowed"



The bee-louse (*Braula ceca*) about to burrow into the fine hairs on the thorax of a bee, and suck the vitality—about four times actual size.

its way down through this mass of fine hair. We wish that all of our readers could see the original photograph, for, being enlarged, a mass of fine hair is shown all over the bee that is not visible on the bee itself except with the aid of a strong glass.

Prof. A. J. Cook, in "The Bee-keeper's Guide," describes this bee louse as a blind, spider-like parasite, which, considering the size of the bee on which it lives and from which it sucks its nourishment, is enormously large. He states that two or three, and sometimes as many as ten, are found on a single bee; but on the bees sent to us there was only one insect, and in each case it was clinging to the back of the thorax, about in the middle, as shown.

The bee-louse has done little damage, according to Prof. Cook except in the south of continental Europe, Cyprus, and other parts of the Orient. Our correspondent lives on an island in the North Atlantic, west of Spain.

Frank Benton, in a letter to Prof. Cook, as given on page 425 of "The Bee-keeper's Guide," says that the "*Braula*, or bee-louse, is no serious pest if the bees are properly cared for; although in old immovable-comb hives, where the combs are very black and thickened, and in case the queens are old, or where, through some extraneous cause, the colonies have become weak, these lice may be found on queens and workers alike. Mr. Benton thinks that, with the attention given bees in America, the *Braula* would never become a serious pest, even if introduced here.—ED.]

A STRUGGLE WITH EUROPEAN FOUL BROOD.

The Removal of the Queen and the Introduction of a New Italian Queen Effected a Cure; Goldenes Preferred to Three-banded; the Alexander Method Followed.

BY EDGAR WILLIAMS.

Continued from Feb. 1st issue.

Arriving upon the scene I found smoke pouring up from the floor and about the windows; but there was no fire in sight. We rushed from the attic, then to the kitchen, when, behold, early that morning I had put the honey that I had extracted into a large kettle and set it on the kitchen stove to boil for a few hours in order that I might feed it back to the bees. Well, this honey had gotten the swarming fever. It was trying its best to swarm out of the kettle and cluster on the stove, while the smoke was making desperate efforts to pass through a small register in the ceiling up into the attic. The honey was taken off the stove, and the windows and doors opened to let out the smoke. But no sooner was this done than clouds of bees hovered around the outside, so that the doors and windows had to be shut again. The bees smelled the honey, so I left mother to suffocate with the smoke while I returned to the wax.

A few minutes had been spent with the wax when I received word that the bees were swarming. They had decided not to stay on those empty frames. Fortunately all my queens were clipped, and the bees were never returned. The day was a warm one; and by this time I was getting tired and somewhat nervous. I felt as though bees, wax, and honey were things I would rather not see during the rest of my life. Nevertheless, I wanted to finish the job that day and be through with it; so the rest of the combs were put in the kettle, allowed to steep awhile, and then taken out and buried in a manure heap. I intended to press the wax from the combs; but bees were flying around some, and I was afraid they would get some of the honey. "Haste makes waste," and as a result I secured about 10 lbs. of wax from 300 combs. The slumgum might have been saved and the wax secured at another

melting; but just then it looked better to me in the manure heap. The frames were carried from the attic and dipped in the kettle of boiling water. That done, it was quitting time. I retired early that night very tired, almost sick, and mother was sick.

In the morning I was kept busy most of the time taking care of the swarms. Three-fourths of those thirty colonies were determined they would not stay on those empty frames. They would swarm out, return, and in a few minutes be in the air again. It had been nearly three days since I had shaken them. No honey was being gathered, and I noticed that bees were dropping from the cluster on to the bottom-boards. I began feeding back the honey, medicated with carbolic acid.

The next day being Sunday, I went to church. I returned to find that five or six swarms had come out and returned, nearly all the bees going into two or more of the hives. One swarm had come out so often I had caged the queen. The queen died, and the swarm came out without any queen. Entirely disgusted with the bees, the next morning I shook them on two combs. Now, these combs were perfectly free from disease, as they had been hanging in the top of the woodshed by wires for over a year. These were combs the bees had died on during the severe winter of 1903. The bees had shown no disease whatever the fall of that winter. Combs were clean, and free from honey. This was about six days after the bees had been shaken the first time. The combs that the bees had built since I fed them were melted, and this stopped the swarming fever. A few days afterward I noticed in front of one hive a drop of rotten matter, like that in the combs. Where it came from I can not say unless from the bees. Did this matter, as large as two peas, contain disease-germs? In a few more days I looked at the brood and found six diseased cells in four colonies. As the honey-flow came on at this time, the diseased cells all disappeared, and the bees built up rapidly; but during the drouth between clover and buckwheat the disease appeared again. Over half of the colonies showed disease. I gave up all hopes of getting rid of the disease by shaking.

I looked over my back numbers of GLEANINGS, and read in two instances of what was supposed to be pickled brood being cured by Italianizing. Like a drowning man grasping at the last straw, I immediately ordered fifteen Italian queens. The buckwheat flow came on, and the colonies all improved except six, which remained rotten with the disease, all through the fall flow, and had to be united when fall came. Two of these I sulphured. The following spring told the story. The fifteen colonies headed by Italian queens remained healthy, showing only a few diseased cells. The other colonies, scattered here and there among the Italians, were nearly all badly affected with the disease the same as the previous spring. This settled the question with me. I Italianized my bees,

and have had little trouble since, except with mismated queens.

There is quite a number of hybrid bees around me, and I find a mismated queen's bees, although raised from yellow stock, to have disease just as badly as the blacks. I managed to get rid of my mismated queens in the spring by uniting weak colonies with them, of course killing first the hybrid queen. I find the goldens better than the three banders. The latter show the disease somewhat. An occasional colony is to be found that will have it seriously enough so it will not store any surplus; but it is a rare thing to find a colony of goldens that has disease very badly. Some of them will show a few cells in a dearth of honey, but nothing serious. I find them just as hardy as the other. I have the Doolittle and the Alley strain.

I mentioned the fact that I sulphured two colonies. Well, I took those combs and hived my Italian swarms on them that summer, and they cleaned them up so that they remained healthy. I also took an Italian colony and shook it on to the brood of a diseased colony. About a third of the brood was dead with disease. That was during a dearth of honey, and in two weeks nearly all this brood was healthy. I believe the Italians are better housekeepers than the others. They clean the disease out as soon as a cell shows, and do not give it an opportunity to spread; while the hybrids and blacks will let it lie and rot, thereby infecting the adjoining cells.

Where one has the real yellow goldens the queens will sometimes mate with hybrid drones that are quite yellow, thus producing quite a yellow bee, having some black blood in it, and subject to disease. Mr. Lamson, a neighbor bee-keeper whose bees probably took the disease from mine, Italianized with the goldens, and his apiary is now nearly free from disease. Others have Italianized here the past summer. Mr. Phillips, of Washington, D. C., visited my apiary twice. He pronounced the disease the regular European foul brood.

I bought a Carniolan queen, partly to test them with the disease. They also remained perfectly healthy. I change combs from one hive to another, no matter if they do show an occasional cell of disease, and feed any honey I want to. In fact, I manage the bees as if no disease existed. When I find a case of disease with considerable diseased brood I kill the queen, keep the queen cells cut out, and in ten days give to it a ripe queen-cell raised from one of my best golden breeders. This is only a modification of the Alexander plan. I do not wait quite as long, and am very particular to see that the queen is mated all right. If she is not, I expect to find another case of disease that fall or the following spring. My theory is this: The bees will clean out the diseased brood, and this will put a check on the disease for several weeks; and by this time brood from the young queen is hatching, and these bees, if the queen is purely mated, will free the combs from disease if it does begin again.

This spring I began the season with eighty colonies. Three of them were diseased, and had to be treated. Two were mismated queens, and one was a three-bander. Several others showed a few cells, but nothing serious. I did not do any thing with these except that I kept a record of the queens so that I would not be using them as breeders. I am also very careful about letting any thing but pure drones fly. However, most of mine are pure. I took 2000 lbs. of white comb and 1000 of extracted, and from the fall flow 2000 lbs. of comb and 1000 of extracted, or a total of 6000 lbs., and increased the 80 to 160 colonies. Some of the surrounding bee-men have done better than this, as we have had a good season. I now keep the bees in two yards, and winter in the cellar. With the disease under control, and the wintering problem solved, I feel as if I were on the road to success, thanks to bee editors and bee-men who are willing to give to beginners their experience.

Pierpont, Ohio.

ABSORBENT CUSHIONS VS. SEALED COVERS.

No Damp Cushions Found in Fifteen Years

BY A. E. JANSEN.

I can not imagine why any one should be troubled with dampness when using absorbent cushions. I have kept bees for fifteen years, always wintered out of doors, never with sealed covers, and have never had a damp cushion unless the water came through the roof, and have never lost more than one or two out of fifty or sixty hives, with one exception, and that was in the winter of 1903, when 95 per cent of all the bees in this county, not in cellars, died. I lost 10 out of 50 hives. In referring to my diary I find the bees did not have a fly from November 20 till Feb. 12. Sealed covers may be just as good; but why make a change when results can hardly be better? I use double-walled chaff hives of standard make, on stands made of 2x4 wood placed on the ground. The entrance is contracted to $\frac{1}{4}$ or $\frac{3}{8}$ inch; two sticks and a thin board are placed on the frames, partly covering them; a tray five inches deep is used to hold the cushion, which is packed with oat chaff so full that the telescope cover crowds it hard down on the frames, leaving no space between the cushion and the cover. The roof is thin, covered with tarred paper folded around the corners, and secured by a tin cap at each corner and at the sides. Our winters are very trying on hive covers. They must be absolutely water-proof to stand the soaking they get during long winter rains when covered with snow.

FALL UNITING.

U. S. Donis, p. 745, had trouble with uniting bees. For fall work, select a day late in November, when it is too cold for bees to fly, and when they are likely to be confined

to the hives for two or three days. Separate the frames to be moved in pairs beforehand, and set by the side of the hive where they are to go, so they can be handled quickly. The queen in the colony to which the united bees are to be added must be previously removed. If more than one queen is allowed in the hive, and the weather is warm enough for the cluster to break up, there will sometimes be trouble. A strong queenless colony can be united with a two-frame nucleus with a queen, and I have never had a failure. *Be sure the day is quite frosty.* The chill they get will not hurt them, but will cause them to cluster closer and unite quicker.

New Paltz, N. Y.

[We observe that you are using standard double-walled chaff hives and that the cushions are filled so full of oat chaff that the cover crowds it down hard on the frames, "leaving no space between the cushion and the cover." Practically all of those who report in favor of absorbing cushions, without a sealed cover between the cushions and the frames, have emphasized the *great importance* of leaving an air space between the cushion or packing material and the cover, so as to let the absorbents dry out. Assuming that moisture passes up through absorbing cushions, we are unable to understand how that moisture can escape when the cover comes in contact with the cushion, and is further protected by a tarred-felt cap over the whole. This moisture is bound to accumulate, and it seems very remarkable to us that your cushions should not be very damp before spring.—ED.]

ABSORBENT CUSHIONS VS. SEALED COVERS.

Sealed Covers Not Entirely Sealed; Wheat Chaff Better than Oat.

BY W. H. KIRBY.

It is about twenty-five years since I started keeping bees, and from the start I adopted the system of wintering that I still follow—that of packing on summer stands in small open sheds, as per bottom illustration on p. 468 of the 1908 edition of the A B C and X Y Z which shows one of my sheds and my whole plan of packing with leaves, etc. With a seven-inch-deep telescopic cover, and under covers on top of brood-frames, a chaff box, the length and width of the hive, with a burlap bottom, is placed. These chaff boxes are four inches deep, and filled full of wheat chaff. No other kind is as good for the purpose. It remains open, and does not pack down close like oat chaff when a little damp. With the hives packed between and at the back with maple leaves, solid to the tops, the tops and fronts of the hives being without packing, they are exposed to the weather, and in low temperatures the moisture is

condensed on them, and inside the front end ice will form. This does no harm to the colony, as it melts and runs out of the entrances in mild spells of weather. The covers, having no ventilation, retain the heat of the colony, and the small amount of moisture that rises up through the chaff is attracted to the under side of the top of the cover, and a small portion of moisture settles on the top of the chaff. I have never yet seen any ice under the cover or on top of the chaff—only a mere dampness under the cover; and it was very seldom the top or only a part of the top of the chaff was wet much below a quarter of an inch.

In the spring, when taking off these chaff boxes I have found grains of wheat, that were left in the chaff, sprouted, and a growth of 4 inches made, thus showing that there was considerable heat in the chaff to cause this amount of germination.

One fall a number of years ago I had not enough chaff to go over all, there being some eight or ten hives that I put fine hard-wood sawdust on instead of chaff. This was practically the same as sealed covers. Every one of these colonies was injured, and most of them became extinct in the spring. They were attacked with dysentery, and outside combs were badly molded. This convinced me that fine sawdust is a failure for absorbents, and I have never used it since.

I think that if those who winter with cushions or chaff boxes on sealed covers were to examine closely, they would find some openings around near covers that allow upper ventilation and let the most of the moisture escape. Two years ago this month I bought a hive of bees from a neighbor who brought them in from the country. It had a single-board cover nailed on with a little crevice near one top corner. They had been out beside a strawstack without any protection. We brought them home one night when the mercury was a little below zero, and placed them in leaves. They wintered perfectly, notwithstanding this late cold disturbance. This experiment makes me think there must be some openings in these sealed covers to let off vapor.

As long as I keep bees I must have a deep telescopic cover, and wheat chaff and maple leaves for wintering. The last two or three winters I have tested some double-walled hives packed with leaves, and find them all right.

Oshawa, Ont., Can.

NOT IN FAVOR OF HOLDING THE NATIONAL AT ANY FIXED PLACE YEAR AFTER YEAR.

BY J. W. R. USE,

President of the Missouri Bee-keepers' Association.

The next best thing to attending a convention is getting a report of the sessions. When one attends the meetings he talks with many other bee-keepers and gets ideas that, of course, are not given in the reports. Then,

besides, there is the pleasure of meeting old acquaintances and making new ones.

I have the report before me of the Sioux City, Iowa, meeting; and among a great many other good things I notice, first, what President Hilton said when it was proposed to locate the meetings at some central place; also what Mr. Dadant said endorsing the president's views. I wish to voice my own sentiment in this matter. Mr. Hilton and Mr. Dadant thought that, to locate the meetings in one place, would deprive many of going on account of the distance to travel. Although it is very desirable to have as many as possible of those present that attend almost every year, many new ones are needed, so that there may be an exchange of views, methods, etc. Now, it is my opinion that, if all the meetings were held at one point, the death-knell of the Association would be sounded, and most of the bee-keepers in the United States would lose interest in both the meetings and in the Association.

The by-laws of the Missouri State Beekeepers' Association forbid holding a meeting in the same place twice in succession. Violating the by-laws has been suggested more than once; but I have always opposed doing so. While we have had meetings in some places that were unsolicited by any of the local bee-keepers, in almost every instance where we did this these local bee-keepers did not attend well.

Our best meetings have been held where the local bee-keepers were interested enough to give a pressing invitation and to attend all the sessions. We always have a rousing convention on such occasions. I am opposed to going anywhere without an invitation unless there is a special reason for doing so. There are many bee-keepers in my own county; but very few take any interest in attending a convention, and for this reason I would do my best against locating our State meeting at this place permanently. I believe in passing the appointments around.

Mexico, Mo.

ARTIFICIAL SUBSTITUTES FOR POLLEN.

Can such Substitutes be Fed Inside the Hive During a Time when it is too Cold for Bees to Fly?

BY F. DUNDAS TODD.

If I am to judge from the reports that appeared in the various bee journals, the outstanding feature of the spring of 1909, so far as it concerned bee-keepers, was the marked dearth of pollen. I happened to be specially interested in the matter, and so noted carefully the various communications, being rather surprised to see that, over the whole continent, the one complaint was made. Some peculiarity of the seasonal conditions had in most localities prevented the development of the necessary fructifying material in the plants; but on Vancouver Island our situation was even more exasperating, for all

around us was a wealth of pollen in the willows; but the weather remained so persistently cool that the bees could not fly for weeks. The first loads were carried in Feb. 22, but from that date until April 3 there was scarcely a day warm enough for the bees to fly.

In my own case the situation was a highly critical one. In September I had fed the bees until every hive contained at least 25 pounds of actual weight in stores. Colonies have been known to go through the winter here on 12 pounds; so I felt every thing was safe and sound. After a zero wave early in January I was astounded to find one-third of the colonies dead of starvation, while the others were on the verge. Now, pollen had been carried in freely all the fall; but in the dead hives there was not a scrap, and mighty little in the others. Candy was at once given above the frames; but what to do in the matter of giving a substitute for pollen was the crucial problem. As a matter of fact I did nothing, for the very good reason I did not know what to do.

The plan of giving flour out of doors I was familiar with theoretically; but since the temperature was too cold for the bees to fly this method was entirely unavailable. So all I could do was to hope for the best, and watch one colony after another gradually fade away of what is generally called "spring dwindling," but which one writer recently labeled "pollen-dearth." When the weather did get warm enough for the bees to fly I found myself owner of only one-third the number of colonies that had been put away for the winter, all weak ones at that.

Naturally there arises the problem, "Is there a practicable method of giving a substitute for pollen in the hives?" All through February and March I searched bee literature in vain for light on this subject, but it was not until fall that I got track of any thing that looked feasible. When the season's work was over I decided to read carefully every book in my possession, just to see that I had not missed some useful hint that was not considered by the authors to be of sufficient importance to be indexed, and soon I stumbled over one sentence that was suggestive but not at all explicit.

"The Book of Bee-keeping" is a Chicago reprint from plates of what is apparently an edition originally published in England. At the end of a paragraph on spring feeding I found this sentence: "Flour candy can be given with advantage at this season of the year;" not a word anywhere as to how it should be made, whether the flour should be added at the beginning of the cooking, the middle, or the end. So the only interpretation possible is this: Artificial pollen in the form of flour can be given provided it is mixed in the syrup of which the candy is made.

The search had now become interesting, so all American bee books were gone through page by page, and at last I was rewarded by finding a few sentences on the subject in Mrs. Comstock's "How to Keep Bees." On

page 142 she says, "The unbolted rye flour, or even oatmeal, or whole-wheat flour, may be used by the bees as a substitute with perfect success. *The meal may be mixed with the candy if it is desirable.*" Now, this is explicit; but I should much like it if some details as to methods of cooking had been included.

"A Modern Bee-farm," by Simmins, is a book I like to read in the winter time to wrestle with his startling ideas and devices, trying to dig the essentials out of his rather involved language. Recently I found he also has something to say on the flour-candy proposition—just four words, and then he leaves it in peace. Let me quote the whole paragraph, beginning on page 189 of the 1904 edition:

The act of breeding, which recommends, in normal colonies, about mid-winter at the center of the cluster, is not in itself a disturbing influence, for as yet its extent is never developed beyond the means at hand for its moderate continuance. But when the owner begins unduly to feed candy, and meal added thereto, then the elements of additional unnecessary excitement are immediately apparent in a large death-rate caused by the premature flight of the workers in search of large quantities of water. The cluster expands unnaturally, and thereafter a serious drain is made upon the vitality of the bees in keeping up a higher temperature generally.

There the proposition rests, so far as I am concerned, for I am unable to find any more references in the bee literature at my disposal. But I am intensely interested in this method of giving the bees a substitute for pollen, if it is practicable, for the indications are that this part of the world may have a repetition of the seasonal conditions of last spring. This is written exactly one year from the day when the abnormal zero wave struck us; but there are no signs of its being repeated. Instead we are having steady cool weather, the thermometer hanging around the freezing-point, and have had since the end of November. My bees are wintering on about 16 pounds of honey-dew and 11 pounds of syrup, so the prospect is not altogether cheerful, seeing that they have not had a flight for over a month at the date of writing, and may be confined three weeks more at least. In most winters here I am assured there are many flight days each month, but this one is different.

Victoria, B. C., January 4, 1910.

[It is unfortunate for you that you did not have at your command the back volumes of this journal, particularly for the years from 1877 up to 1884 and 1885. During that time there was considerable discussion on the subject of giving bees what was then called "flour candy." This is made by mixing one part of rye meal with three parts of white sugar, and wetting it down with a little water. It is then placed over a slow fire and cooked until it is ready to "sugar off." This point can be determined by dipping the finger in cool water, then into the kettle of candy, and immediately back into the water. When the film of syrup breaks like eggshells from the end of the finger the candy is just right.

It is now taken off the stove; and as soon

as it begins to harden on the sides of the kettle the mixture is given a good stirring, the stirring being kept up until the candy is so thick that it can just be poured. Greased tin pans should be in readiness, when the contents of the kettle are poured into the pans and allowed to cool. Cakes of this candy are laid on the brood-frames in the spring, or about the time when brood-rearing will permit. Such candy will supply the bees with syrup as well as a farinaceous diet, so they will rear brood.

The question is raised right here, "Why is there so little said about this kind of candy now? Why should not full directions be incorporated in our text-books of to day?" In the first place, a flour candy, such as is described, is very difficult to make. Even a confectioner has to try several batches before succeeding. In the second place, the meal or flour in the candy is quite likely to stimulate brood-rearing *out of season*; and brood out of season that chills and dies by subsequent cold weather puts a severe drain on the colony, if it does not kill it outright. For that reason it seemed best generally speaking, to let nature handle the problem of a farinaceous diet for the bees. Ordinarily, brood-rearing should not commence much before natural pollen can be gathered. There is only an occasional season like that of 1909, when bees really suffer from a want of nitrogenous food. It is during such seasons that a meal or flour candy in the hive would be worth every thing to the bee-keeper; but even then it would be far better to place dry rye meal on trays outdoors and let the bees themselves gather it and carry it to their hives. It is much safer for the beginner to furnish rye meal in this way than to give it in the hives. The bees can not, of course, gather this rye meal before they can use it to advantage, and right here is the reason why we recommend meal outdoors instead of meal candy in the hive. If, on the other hand, the meal be given in the hive they are almost sure to begin brood-rearing whether conditions are suitable or not outside. For that reason we dropped all reference to flour candy from our A B C of Bee Culture, because we found that beginners were inclined to *overdo it*; and some, strangely, would give it during midwinter just when it would cause dysentery. There is no doubt that flour candy could have been given in many yards last spring to very good advantage. The weather happened to be warm enough for bees to rear brood, but too inclement for them to fly very much; and when they could fly, there was no natural pollen. If meal had been given in the hive with the candy, there is no doubt that a large amount of brood would have been saved last spring. As it was, dead brood from all over the country was sent to this office, the senders inquiring whether the brood died from disease. In almost every case a diagnosis showed that the brood probably died from a want of the nitrogenous element in their food. After natural pollen was supplied brood ceased dying.—ED.]

HONEY FOR COOKING.

An Experiment in Making Doughnuts with Different Amounts of Honey and Sugar.

BY EMMA M. WILSON.

After reading what was said about honey doughnuts, p 34, Jan. 1, I concluded it might be a good plan to try to see what could be done. I made three different batches, and am sending you samples of each. Batch No. 1 was made after this recipe: One cup hot mashed potato; 2 tablespoonfuls of shortening; 1 egg; $\frac{1}{2}$ cup honey; $\frac{1}{2}$ cup sugar; 2 teaspoonfuls baking-powder; 1 saltspoon of salt; $\frac{1}{2}$ cup sweet milk; a little nutmeg.

Make a cream of potato, shortening, honey, sugar, and beaten yolk of an egg; then add the milk, nutmeg, and salt; lastly, add the flour, in which the baking-powder has been sifted, and the white of the egg beaten stiff.

It is hard to tell exactly how much flour was used; but don't mix it very stiff at first; then try frying a small piece of dough; and if not enough flour, add a little more until they are just right.

Batch No. 2 was made exactly like No. 1, with the exception that one cup of honey was used and no sugar.

Batch No. 3 was the same as No. 1, with this difference: One cup each of honey and sugar was used instead of $\frac{1}{2}$ of each, and two eggs instead of one.

Now, when I came to fry them I found this difficulty. I did not dare to keep the lard nearly as hot as when frying doughnuts without honey. They browned very quickly, and would get too brown before they were cooked through if the lard was kept very hot. So I rolled them out thinner than usual, which helped. None of them were more than $\frac{1}{2}$ inch thick before frying, and most of them less.

Now as to how these three different batches were liked at our home

The first batch, we all agreed, were good; but Dr. Miller and myself thought they might be improved by being just a little sweeter. Mrs Miller thought not. She has not quite as sweet a tooth as we have.

Dr. Miller wanted some made entirely of honey, hence the second batch.

Mrs. Miller and I do not like them as well as batch No. 1, and Dr. Miller thinks them better. Perhaps there may be some prejudice in the case, because they are made of honey.

Batch No. 3 — too sweet for Mrs. Miller. Dr. Miller and I think they are pretty good.

As to the keeping qualities of these doughnuts, I can say nothing as yet, as they were baked only yesterday, Jan 17. I should expect those made with all honey to keep best.

Now, Mr. Editor, I am really very sorry for your digestion if you have to sample all the doughnuts that are launched upon you; but please remember that you invited the catastrophe.

Marengo, Ill.

[Our own judgment in regard to these doughnuts is practically the same as yours. No 1 seems to have the best flavor. No. 2, which is all honey, is much more moist, but the flavor of honey is a little too pronounced, although some might like it for that very reason. No. 3, having a large amount of honey and sugar both, is too rich; and, besides, the doughnut is comparatively dry and hard. We have been making some experiments here, and it appears that a moderate amount of honey and no sugar makes a softer cake, and gives a flavor that is pleasing.]

We wish to suggest that you put away a few of each kind and keep them for a month, and then test them for their softness and moisture. We should like it if you could report to us again after, say, sixty or ninety days.

Apparently an excess of sugar and honey makes the cake too dry and hard after it begins to age. Honey used alone for sweetening surely makes a softer cake. Some of the very best doughnuts we have eaten were very soft but only very mildly sweet. We have not much of a "sweet tooth," and perhaps this is why we like the smaller amount of sweetening.

The honey flavor in the doughnuts seems to be that of some fall honey, and we should like to inquire whether you have ever used a mild honey like clover in making doughnuts. Alfalfa honey is fine for cooking, for it does not have a strong flavor, and the suggestion of mint or cinnamon is quite pleasing.—ED.]

DO BEES FLY IN A STRAIGHT LINE AFTER NECTAR? ARE THEY ATTRACTED BY SCENT OR SIGHT?

Golden Italians Not Hardy.

BY RALEIGH THOMPSON.

I have made some close observations in the last two years. My apiary is in a valley half a mile wide, with hills all around except on the west, where the unbroken country extends for miles. I have traced my bees in this direction four miles. I know they were my bees for they were goldens, and the first that were brought to this part of the State. I will say right here, however, that I did not keep the goldens long, as they were not hardy, and were too much inclined to rob. There is no strain of bees that goes ahead of the leather-colored Italians.

There is a very narrow valley running east for about two miles. My apiary is south of this about 300 yards, and is situated at the foot of a hill with a narrow opening into the valley on the north. Now my bees go north through this opening, then turn east and follow this valley along the south side and the sumac on the hills at the upper end—that is, at the east end. The valley is very irregular in outline, and I have watched my bees follow this route for hours. The hills are covered with timber.

Like many others I thought bees found nectar by sight; but I believe now they find it by scent. Last summer there were about thirty acres of alsike $2\frac{1}{2}$ miles northwest of my apiary. There was very little clover nearer, and the first ten days that this clover was in bloom the wind was blowing from the east. The bees were storing some from sources around home, but not a bee was going to the thirty acres. I was becoming discouraged for I had supposed that bees would go to that alsike clover. One morning, however, as I was coming from the barn I heard an uproar and thought the bees were swarming. I ran out, and it seemed as though all the bees were leaving the hives. They were going to that alsike clover, the wind having changed so that it blew from that thirty-acre field. The supers filled up rapidly. All the bees had to fly over timber almost all the way to get to this clover, and hence I am convinced that they find nectar by scent rather than by sight.

Oakwood, Ind.

[This confirms to a great extent some observations which we made while at the Alexander apiary, located, as it is, upon a side hill, commanding a view of a valley where the eye can take in a panorama miles distant. We have been under the impression that bees depend largely on a telescopic vision to determine the exact location of any flora that might have honey; and while this may be true our correspondent has introduced pretty strong proof showing that they are also guided (sometimes at least) by scent. This is very interesting, and we shall be pleased to know whether others have observed the same thing.—ED.]

THE ALEXANDER PLAN OF CURING EUROPEAN FOUL BROOD.

Even if it is a Success, is it Ahead of the McEvoy Method from the Standpoint of Economy? the Alexander Plan Means that a Colony Must Dwindle Forty five Days.

BY E. M. GIBSON.

I fail to see any thing but loss in the Alexander plan of treating foul brood of either the European or American type. I am well aware that it would be futile to gainsay any thing which that grand old man of Marengo might endorse (page 760, Dec. 15), but I do not think the Alexander plan has the stamp of his unqualified endorsement as yet, and so we may give our reasons for doubting, and let the readers be the judges.

With the above-mentioned method the queen is taken away from the diseased colony until the brood is all hatched, which takes 21 days (I have my doubts as to whether this is long enough in all cases of European; certainly it is not for the American kind). Well, 21 days are gone without a laying queen in the hive at best. One is now in-

troduced that is supposed to be laying; but if a virgin she does not lay until the 21 days have passed. There is no laying queen, then, until the expiration of 24 days; for, even if a laying queen is introduced, it will be three days before she lays. Now it will be 21 days more before any brood is hatched, making a total of 45, and by this time the colony is much reduced in numbers of bees, and little or nothing can be expected of it in the way of surplus for the season.

What is to be done with the queens taken away from the diseased colonies? No one but a queen-breeder would be likely to have nuclei enough to accommodate them; and to prepare nuclei not only takes time, but means a further loss of bees and brood. Then there are two queens to hunt for—one in the diseased colony and one in the hive from which the brood is taken, for fear of getting the queen also.

Let us analyze the McEvoy plan, on the other hand, modified by using full sheets of foundation to start with—a plan which has been successful in my case, and which has led me to believe that the use of starters is superfluous if one is careful in other ways. One might use starters and be careless in some other way which would prove more disastrous. With the modified McEvoy treatment we do not have to find the queen. It is not necessary to start nuclei to hold surplus queens, and no colonies need be robbed of brood and bees. With one helper I can transfer a colony on to foundation every ten minutes, and keep up this rate for eight or ten hours a day. One would have to be extremely successful to find 48 to 60 queens in one day (I am making these comparisons of time, etc., as I write). In three days after a colony has been brushed on to the foundation, combs will have been built, and eggs laid in them; and from that time on, the queen will have all the room that she can possibly use, so that in 24 days from the time the colony is treated there is hatching brood in as good a set of combs as were taken away, all being filled with brood. In the Alexander plan the queen in the same time will have just commenced to lay, and 21 days must yet elapse before any brood hatches to strengthen the colony.

The only difference between the McEvoy treatment and the plan of shaking bees on to foundation to make them carry honey into the super is the brood that is given back to the bees after it is hatched. I know by experience that a colony brushed on to foundation, as soon as the bees begin to build freely in the spring will be only one extracting behind those which are not so treated, providing the disease has not depleted them too much, and they have a vigorous queen.

If there is sufficient honey in the diseased combs that were removed to be worth while, it can be extracted, boiled, and fed back after being diluted, and, if one cares to go to the trouble of utilizing the brood to start new colonies, this can be done by piling up the combs six or seven bodies high and letting the brood hatch, then putting all the

bees into a single hive, giving them a set of frames filled with foundation and a laying queen. I followed this plan with a part of my diseased combs, but abandoned it, as the process was too slow. It is my opinion that the few colonies which we may get in this way hardly pay, for the work is nearly doubled, and the diseased combs are left around too long. I have always felt that the sooner they are gotten rid of the better. The wax from a full set of combs will go a long way toward making foundation to refill the frames. Now add the set of combs made by the colony treated and we are ahead of the Alexander plan (not counting the diseased honey), by the amount of wax from the combs and by two-thirds of a crop of honey, at least; for a colony that has been 45 days without hatching brood in the height of the honey-flow can not be expected to produce any surplus; and if the bees gather even enough for their own consumption they will do well.

As to what we get for our time of melting up the diseased combs, making foundation, and refilling the frames, I can say that the treatment of either kind of foul brood can be done successfully only during the honey-flow, and it is hardly necessary to ask how much 21 days in the height of the honey-flow is worth. We think any one would be willing to do the work above mentioned for even one-half the honey that is produced in that time.

CONDITIONS DIFFERENT AT THE ALEXANDER YARD.

It must be remembered that conditions were very different with Mr. Alexander than with most of us. As I understand it, all of his surplus was derived from buckwheat, the bees building up on the earlier flowers, so that he had the whole summer in which to manipulate the bees in settled weather. Under these circumstances a queen could be removed from the hive for 21 days, and there would still be plenty of time for the colony to build up for the main honey-flow. Many of the things which Mr. Alexander advocated can not be successfully followed, for this same reason. I have in mind dividing, putting weak colonies above stronger ones, etc. I have twice tried his method of dividing by putting brood on above and setting the super off after ten days, and it is a complete failure here, for the weather is too changeable. The weather may be all right when the work is done; but before the ten days is up, a cold spell may come, the queen-cells will be torn down, and started over again in a few days with brood that is too old. Any one who practices this plan long, where these same conditions exist, will soon have a lot of worthless queens. Then in the case of putting weak colonies above strong ones until they are stronger, if it happens to turn cold the bees will all leave the small colony and go down with the larger one below where it is warmer, leaving the queen above to freeze. It is better to double two or three of the smaller colonies and give them less space to keep warm. I can see how all of these plans

may be successful after the weather becomes settled and the time for sudden changes is past. In this section bees have a long time to build up—from February to June; but this is during the rainy season when the weather is unsettled and conditions are very similar to the spring months in the East. Jamul, Cal.

[Mr. E. M. Gibson, it will be remembered, is the correspondent in California who has written such excellent articles during the last year or so. His complete analysis of the two methods of cure, the McEvoy and the Alexander, should be carefully read by all those who are interested in this great question of ridding the country of brood diseases. It is most certainly true that the question of locality must be given careful consideration. In this connection we recall that more than one of our subscribers were not able to work some of the methods advocated by Mr. Alexander, and this was due to difference in conditions.]

Referring to the Alexander cure, it is possible that this could be applied to good advantage after the white-clover flow, when there would be a period of comparatively little brood-rearing. In most localities in the Northern States after the middle of July, when clover and basswood are out of bloom, there will be practically nothing doing for the bees for a month. Now, it would be possible that the Alexander method of cure might be applied at such times to the entire yard without great loss, and feeding afterward. On the other hand, when a honey-flow is on, or, we will say, during the spring when brood-rearing should be carried on to its limit, it would seem that the Alexander plan would be expensive and wasteful, and that at such times the McEvoy method should be employed instead.

The last time we visited Mr. Alexander we talked over the McEvoy and the Alexander plan of cure. If we remember correctly, he made the statement that the McEvoy plan failed to rid his apiary of the disease; that it was only after he employed his dequeening method that relief came. He then went on to mention yard after yard of some of the most successful bee-keepers in New York who had been using the McEvoy treatment, and how, in spite of all their efforts, the plague was continually coming back. In later years, however, the McEvoy plan as now administered seems to be giving good results, for, as we understand it, both European and American foul brood are well under control. As the McEvoy plan has been used almost exclusively, this condition of affairs is brought about by that particular plan of treatment.

We are still desirous of securing further reports on this general subject. In the meantime it would seem that we must take carefully into consideration the question of locality and general conditions. There are probably times when a combination of the two methods can be employed to very good advantage.—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

OUTDOOR-WINTERED COLONIES LOSING A COUPLE OF
DOZEN OF BEES DAILY; IS IT AN ABNORMAL CON-
DITION?

I have my bees outdoors in a good tight outside case; 8 single-story hives about four inches apart packed with straw between hives; also behind and on top. Each hive has an entrance 3 inches by $\frac{3}{4}$, with a storm-door leaned up in front to keep out sunlight, storms, and wind. I notice every day 20 or 25 bees from certain hives, and four or five bees from others, come out and die on the alighting-board, the weather nearly down to zero. Can you say if this condition is right, or are they too warm? Should the entrance be enlarged to six or eight inches? It seems to me that at this rate of coming out there will be few if any left by spring.

C. A. YORK.

Ruscomb, Ont., Jan. 13.

[No matter how well bees are packed outdoors, there will be a certain mortality taking place daily. Some bees, because of bad food, venture from the cluster; others, from other causes, become chilled, then starve and die. Others still, because of old age, also drop off. Four or five dead bees daily is not a great loss, if you stop to figure it up, and is not much larger than we have had at Medina, and what we have observed at other yards where bees are wintered outdoors. They may not appear at the entrance every day; but on certain days when it warms up there will be a sort of house-cleaning in which there will be quite a number of bees pushed out, and one would think that a large number were dying. The probabilities are you have an average of at least ten thousand bees in each of your hives. Suppose there is a maximum daily mortality of 25 bees. There are about sixty days, possibly, of cold weather. This would make only 1500 bees, or a total of fifteen per cent of the survivors. The stronger the colony the larger the number of bees that will die daily, but the smaller the percentage of loss.]

The number of bees found dead at the entrance will be much greater this winter than usual on account of honey-dew. If you have no honey-dew your daily percentage of loss should be smaller.

But the death loss outdoors is usually no greater (if as large) than the loss inside of a good cellar. We have stepped in many a cellar and found anywhere from one to two inches of dead bees on the floor, and yet out of that same cellar would come a lot of strong healthy colonies for spring. It has been contended that many of these bees are superannuated, and would die any way. It is our opinion, based on our own experience, that a two-inch deep loss of bees all over the cellar bottom is too great. We have wintered in our shop cellar, and the total number on the cellar bottom—well, they could almost be counted.

But perhaps some who were wintering outdoors will report that they see no dead bees in front of the entrances of their hives. The first warm day the bees can fly in the spring there will be found quite a large bunch of them in front of the entrance of almost every colony, if there is very much honey-dew in the hive. These would be the bees that died all during the winter.

Right here ought to be entered a caution. Sometimes the dead bees will clog up the entrance, and then there is sure to be trouble; because a closed entrance usually means death to the whole colony.

Replying to your question, your entrances are large enough providing they are kept clear of dead bees. If you do not make a practice of raking them out clean about once a month, the entrance had better be $8\frac{1}{2}$ inches in the case of a strong colony.—ED.]

CARBOLIC ACID IN SPRAYING-SOLUTIONS TO PREVENT
BEES FROM BEING POISONED.

Mr. Root:—I was pleased to receive your letter of the 15th, inclosing one from Messrs. Metcalfe & Parks, of Mesilla Park, N. M., who, I remember, reported to you last year that their bees had been poisoned by arsenical sprays on fruit-blossoms. In reply to your inquiry as to whether carbolic acid can be used in dilute solution in the spray liquid to repel the bees and at the same time not injure the setting of the fruit, I will say that I think this is possible. I must immediately confess that I have had no practical experience in this matter, nor do I know any one else who has had such. My recommendation would be that the trees be spray-

ed just after the blossoms drop. They are not then secreting nectar, and the bees would not be working on them. The results of spraying would be fully as good as or better than if the liquid be applied while the trees are in bloom. From a horticultural standpoint I surely do not think it best to spray trees with anything while they are in bloom. Thus the danger of killing the bees will be entirely overcome.

As the inquirer does not state what kinds of fruits he sprayed I can not give the formula with such certainty as I would if I knew for sure whether they are the pome fruits or the stone fruits. In general, however, 2 lbs. of arsenate of lead, 1 lb of bluestone, and 3 lbs. of lime in 50 gallons of water will be found safe and efficient. If there really be danger of the bees sipping this, it can be avoided by the addition of a very small quantity of carbolic acid. The crude article will do as well as the refined, and is, of course, much less expensive. By shaving 1 lb. of hard soap fine, in a gallon of hot water, one can add one gallon of carbolic acid to this soap solution, and emulsify it by vigorous beating or churning through a spray-pump. It will become a creamy mass, and can be kept as a stock solution. Only enough of this will be needed in each barrel or tank of the arsenical spray to repel the bees; and as bees are very readily repelled by the odor of carbolic acid, this means that the quantity will be so slight as not to prove injurious to young fruits. It is my opinion that the addition of one-tenth of one per cent of the carbolic acid would pollute the spray liquid so as to repel the bees, and that considerably more than one per cent will be needed to injure the fruits.

Harrisburg, Pa., Jan. 18.

H. A. SURFACE.

Economic Zoologist.

[Reference has been made before in these columns to the use of carbolic acid in spraying-solutions to keep the bees away from the fruit-trees; but no one so far seems to have any definite knowledge of how the acid has been used. If any one can furnish the information we shall be glad to hear from him. In the meantime we have no doubt that the suggestions made by Professor Surface (who is probably one of the best authorities in the United States on spraying) will be safe to follow.—ED.]

KEEPING WEEDS DOWN AROUND HIVES.

How can I prevent grass and weeds from growing about my hives? For some time I have had my ashes put in the apiary in order to keep down grass and weeds, and to give the place a neat appearance; but this season dandelions, docks, and fall grass are most luxuriant; and even salt does not kill them as I once thought it would. Kindly tell me something not poisonous to bees that will surely keep down all growth around the hives.

Moorestown, N. J., Aug. 7.

S. E. WILLIAMS.

[If you have a permanent location for your apiary, and wish to go to the expense, a good way is to make a concrete foundation for the hives. This can be made a few inches larger than the hive in order to prevent grass and weeds from growing too close. The top of this foundation may be made level with the ground; and since there would be no object in using a very thin mixture of concrete we believe that one part of cement to nine or ten parts of sand and gravel would be sufficient. If the sand and gravel can be obtained cheaply, the expense will thus not be very great aside from the labor of making them.]

Salt will kill weeds and grasses if enough is used. It is so cheap that small handfuls of it scattered here and there, especially around the entrances of the hives, will make short work of vegetation not wanted. If your yard is located out in the country where sheep are kept, you can easily crop down grass and weeds by letting the sheep loose in the bee-yard at night. In fact, it will do no harm to leave them there all day. Occasionally a sheep will get close to an entrance; but unless a bee stings it around the eyes or nose it can do but very little harm. It does not take a sheep long to learn to push its head under a clump of bushes, when the rest of its anatomy will be taken care of by its wool.—ED.]

MOVING BEES IN COLD WEATHER; IS SNOW A PROTECTION TO OUTDOOR-WINTERED BEES?

What, in your judgment, would be best for me, as I do not find any thing printed regarding my situation? I have bought 60 colonies of bees 20 miles distant; expected them to have sufficient stores to remain where they are outside; but by chance I discovered they were very light. We have a solid sheet of snow from one to three feet deep all over. Would you advise me to move them home those 20 miles on sleighs when we

get a temperature of from 30 to 40°, and place them in a bee-cellar where I already have 70 colonies? Would you expect it to cause a great loss owing to bees filling themselves or would it not be just as bad in early spring when roads are rough, owing to the greater activity of bees at that time?

I have another yard of 60 colonies snowed half under before I could get them in the cellar. They are in ordinary dovetailed hives, Colorado covers, so I left them, thinking the snow was as good as any protection to bees. Would you put them in the cellar the last two months, as I now have a cellar empty ready for bees?

NEILS A. NELSON.

Dike, Iowa, Jan. 18.

[It is perfectly feasible to move bees during cold weather when sleighing is good, although we would select a time when it is just below freezing. We would not advise waiting until spring when the roads are broken up. If they be moved now and put into a cellar the disturbance would cause no trouble—at least, reports where precisely this same thing has been done in the past have not shown any bad results.]

Yes, snow, if banked up around the hives, is a decided protection. The more we can have the better, providing it does not melt around the entrance and freeze, sealing the entrance hermetically. That is the only danger arising from too much snow. An ordinary light snow banked up around the entrance will do no harm; but should there come a thaw, then a severe freeze-up afterward, the apiarist would do well to look to his entrances.—ED.]

CAN THE DOOLITTLE PLAN OF NON-SWARMING BE WORKED WITH THE CHAFF HIVE? FEEDING BEES WITH A SYRUP MADE FROM SCRAPS OF CANDY.

Will you please inform me how to work the Doolittle plan of non-swarming? I have all double-walled hives with tight bottoms. Could I put a single-walled hive on top? Can I shake No. 2 hive into No. 1 instead of No. 1 into No. 2?

I also should like your opinion of feeding scraps of candy to bees in the spring in syrup form, such as horehound, anise, tartaric acid, menthol, peppermint, butter-scotch, leaving out medicated cough drops, burnt sugar, etc.

PHILIP F. DEBBOLD.

Clinton, N. Y., Jan. 19.

[There is no reason why you should not work the Doolittle system of non-swarming with a double-walled chaff hive, providing such hive is built on the modern plan, so that a single-walled hive or super can be set on top. If you consult the bee-supply catalogs you will find in most cases that single-walled supers and hive-bodies can be used on top of double-walled chaff hives of the same frame capacity.]

We would not advise you to give bees syrup made from scrap candy during cold weather. You can use this to good advantage toward spring when the bees will have a little opportunity for a cleansing flight. As a general thing we would not recommend anything for winter food except the best of honey or granulated-sugar syrup.

Burnt sugar would be almost sure death to a colony, although it could be used safely enough in warm weather when the bees can fly.—ED.]

BEES GETTING CHILLED AT THE ENTRANCES OF THE HIVES.

I started bee-keeping in the spring of 1908 with one colony. I increased this colony to four fairly strong colonies, which are provided with good stores, and are in single-walled hives, packed warmly in winter cases. The bees wintered well last winter; but this winter, although the conditions are the same, I find a handful of dead bees every few days around the entrances, both outside and inside. They seem to run to the entrance and get chilled so that they are unable to get back. Is the hive too warm or too cold? We have had zero weather lately, and I had the entrances $\frac{3}{4}$ x 2 inches, but have lengthened them to 6 inches and in some cases to 8; but the bees come out and die just the same. If this keeps on I shall lose all before spring, as a handful every other day is too much loss for any colony.

P. J. HOEVEL.

Bradentown, Pa.

[Mortality of bees is greater during severely cold winters than mild ones. This is one reason why you find more dead bees in front of the entrances this winter than last; but probably the greatest reason for making the bees come out is the character of the food. If there is much honey-dew in your hives many bees will become uneasy on account of their intestines be-

coming clogged. Those bees you see coming out are probably seeking a chance to fly. They chill and die when they come outside. Bad food is one of the causes that induce spring dwindling.—ED.]

NEW MEXICO WELL ADAPTED TO BEE-KEEPING.

As I have not seen any thing from our country, I venture to report. I live in the northwest corner of New Mexico, in what is known as "The Sunny San Juan Co." This is a great fruit country—one of the best in the West. It is a new country, with a delightful climate, and one of the very best for bees.

I have been in the bee business for a number of years, and I have made it my leading business. I can say that, so far, I have never made a failure. Failures do come, but I have been so fortunate as to escape.

I started with bees in this place one year ago by purchasing 140 colonies. Of these I lost 35 in the spring; and as I had to feed, things looked discouraging; but the willows began to bloom, the bees took courage, and we got a good honey-flow. Afterward the swarms came till I now have 170 colonies.

I had a large swarm July 4 that filled the hive and made me seven 24-section cases of honey that sold at home at \$2.75 a case.

I have kept a strict book account, and I find that an investment of \$528 for bees and all supplies has brought a return of \$895 in twelve months, and I now have more bees and supplies on hand than I started with.

I did equally well when in Colorado; but I think this the best country for bees that I have seen yet. I have been in a number of States.

REV. T. D. SAFFELL.

Farmington, New Mex., Dec. 20.

HOW TO MAKE SYRUP SO THAT IT WILL NOT CANDY.

Several years ago my father kept bees at Quincy, Michigan, and one winter he was obliged to feed his bees quite a little syrup. He experienced some difficulty with the first he made in keeping it from candying. He was a subscriber to GLEANINGS at that time; and as I remember it he wrote you to learn how to make the syrup properly. I do not keep bees, but have occasion to make syrup from granulated sugar frequently, but have not been successful in making it so it will not candy. The syrup we make I prefer to have quite heavy.

E. D. RICKETSON.

Mason City, Iowa, Jan. 19.

[Our practice is to put nothing in the syrup to prevent candying; but there are some who find it necessary, especially if the syrup is thick, say two $\frac{1}{2}$ parts of sugar to one of water. To prevent candying, Dr. Miller recommends a teaspoonful of tartaric acid to every 20 pounds of sugar. Doolittle uses honey in place of acid in these proportions: 15 lbs. of water, 30 lbs. of sugar, a d after the mixture has been thoroughly heated he adds 5 lbs. of extracted honey, making in all 50 lbs. of feed.—ED.]

IS THERE ANY LAW REGULATING THE DISTANCE OF BEES FROM THE HIGHWAY?

Will you please inform me if there is any law as to how far bees may be set from the hives of our neighbors—also from the street?

WM. H. MORSE.

North Girard, Pa., Jan. 19.

[There is no law in any of the States that we know of that regulates the distance that bees shall be kept from the general highway. As a matter of precaution, however, we would advise putting all bees in the back end of a town lot, or, if they are to be located in the country, at least 100 feet from the general highway, and the same distance from the line fence, especially if there is a cultivated field in which horses may be driven in plowing or cultivating.—ED.]

A SUCCESSFUL WAY OF KILLING RATS.

There are many ways to catch rats; but most traps are useless so far as getting the "old timers" is concerned. An experiment of mine has proved successful with both the old and the young rats. I take two tin pans: fill one with meal and dry plaster of Paris, half and half, well mixed together, and the other one with cold water. I put them where the rats can get to them easily, and then watch if possible. The rats eat the meal and then drink the cold water. The plaster causes them to drink a good deal of water, which sets the plaster and causes death. I have found rat-ward almost as hard as a stone.

W. HACKING.

Idaho Falls, Idaho.

[This looks as if it might work well. If any reader tries it we should like to have him report.—ED.]

OUR HOMES

By A. I. Root

Thou art the Christ, the Son of the living God.—MATT. 16: 16.

Lord, save us; we perish.—MATT. 8: 25.

Most automobiles—in fact, I think I may say all automobiles—have a special and exceedingly important mechanism called the “brake;” and this brake, or system of brakes, is for the purpose of not only checking speed but of bringing the machine speedily to a standstill when occasion may require. The machine I have run for so many years (and so many *thousand* miles) was made with *three* brakes. First, if you pull the starting-lever backward instead of forward it acts as a brake. Besides this brake there is a pedal to be operated by the left foot. This is more powerful, and will, if pushed hard, bring the *engine* almost “up standing” at once. You might at first thought say, “Why, these two brakes are surely enough;” but, listen and consider. Suppose the chain (or other machinery) that connects the engine to the drivewheels should suddenly break. Chains wear out, and are often run when they are liable to break and drop clear off the machine. Of what use is your brake on the *engine* when the chain is gone? Suppose you are going up a long steep hill and your chain gives way. Your machine will at once go down backward at a speed requiring the utmost skill of the most expert chauffeur to keep it from a disastrous wreck.

Well, to guard against such contingencies all good machines have what is called an “emergency brake.” This brake has no connection with the engine, but clutches with a grip of steel the powerful driving-wheels of the craft; and the lever that works the device, although out of sight, and as a rule unused, is so close to the driver’s right hand that he can grasp it firmly, if need be, *in the fraction of a second*. I hardly need tell you of the importance of thoroughly testing this *emergency brake* often. If a dog suddenly rushes in front of you, you should be able not only to save the *dog*, but possibly save a smashup of the whole outfit, endangering the limbs and lives of the occupants. Running over a worthless dog recently overturned and made an expensive wreck of a big and valuable machine.

Let us now change the subject a little. Last evening (Wednesday) the leader of our prayer-meeting took the subject of prayer. He asked different members present several questions, and finally gave me the question, “To *whom* should we go in prayer?” In reply I gave the above about the automobile, and finally added we should go to the Lord Jesus Christ, and that it is every Christian’s privilege to find in *him* an “emergency brake” fully adequate to arrest our frail human bark and pilot it safely through *all* life’s emergencies. That little prayer, “Lord, help,” has been my “emergency brake” ever since I started to follow the lowly Nazarene. I have before told you that I have used

it so much that it rings out in my heart like an alarm bell (*all of itself* I might almost say), whenever danger or a crisis appears. When the danger is very great, the prayer is, “Lord Jesus, help.”

I want to give you two instances of how this “emergency brake” works.

One morning years ago, I came over to the factory just before the whistle blew and found the janitor (an elderly man who had been long in my employ) talking vehemently to a group of the hands. He was so much stirred up he did not notice my presence, and kept on. I soon gathered from the smiles from those present that it was my poor self he was rating. Finally he turned so as to discover I was present and had heard his tirade. He stopped a little; but as he was still angry he turned on me and gave me, right before a lot of hands, a regular “blowing-up.” I think his charge was that I was too easy with certain ones. That I had particular favorites who broke rules as they pleased, etc. I had opened my mouth to reply and tell him, as pleasantly as I could, to hunt up a better lot of folks to work with; but, sharp and clear, came the “Lord, help!” The “emergency brake” gave orders to say nothing to him at all while he was angry, even though he *had* been stirring up disrespect to his employer. I looked around smilingly on the crowd that had gathered, then walked away with long rapid strides amid the roars of merriment from the group of bystanders. I felt happy over my victory (as the Christian always does), and forgot all about the incident until a long toward noon when the janitor followed me into one of the basements, and, with tears in his eyes, said something as follows:

“Mr. Root, I do not know how I can ever thank you enough for not turning me off on the spot this morning as I deserved. I am out of health, and touchy, I suppose. I don’t think you know how some of them take pains to vex me and hinder me from looking after the interests of the business. You have always been my best friend; and if you will forgive me this time I will try to show you my penitence is not all empty words. I am trying to be a Christian; but I make such poor work of it I sometimes think I had better give it all up.”

He was in our employ several years afterward; and, when near to death, he sent for his old employer; and it was my privilege to cheer him up as best I could ere he took the trip across the dark valley.

Now, friends, suppose I had on that particular morning told him with harsh words to “get off our premises, and never show your face here again!” What would have been the result? He and I would have been enemies the rest of our lives. His Christianity would have received a shock, and *mine* too, for such things *always* “cut both ways.” Don’t you think you had better adopt my “emergency brakes”? It will cost you nothing, for the Savior’s love is as free as the air we breathe and the water we drink. I have outlined in the above two ways of settling a

difficulty. What would be the effect on humanity should one spend his whole life in the way I was prompted to do, rather than the other way?

Before giving the second illustration let me say the dear children, as well as Mrs. Root, have often objected to that portion of these Home papers where I tell of my own temptations and impulses toward selfishness and wrong; and God knows it is no pleasant task to admit I am tempted to be selfish.

I give you these conflicts just as I give you my fights against the wild animals that destroy my chickens, t. at you may in like manner come out victorious against the foes of honest industry.

My old father was, while on the farm, greatly interested in raising and selling colts. Well, when he was making a sale he was so careful to tell the purchaser the *faults* as well as the good qualities of the horse in question, that we children used to tell him he overdid the matter, and made out the horse worse than he really was. I hope it was true (bless his memory) that he was more concerned about being *strictly honest* than he was about getting a good round price for his horse's flesh.

Now I hope you will excuse me for going into the details pretty fully of a simple little transaction, for there are important *principles* involved in it.

I was away from home, in a town where I was not very well acquainted. I had an important letter to mail and was out of stamps,* and, still worse, but little money to buy them. It was just before the holidays, and there was so much mail and so many packages that extra help was called into the office. The additional help was only a schoolgirl, evidently; but I presume the postmaster decided she could preside at the stamp-window, even if she had but little experience with money and making change. I laid down a coin, and asked for 25 two-cent stamps. After a little time in counting the stamps, she handed them over to me with two coins—a half-dollar and a quarter. Let me digress a little right here. If I should tell you of something I had *dreamed*, no one could tell whether I told the exact truth or not. Only *God* could tell. In the same way, when I tell you of the conflicts that went on in my own mind, only God knows whether or not I am truthful. As near as I can remember, it was in a somewhat absent-minded way I took the coins and the stamps and went over to another part of the office to mail the letter. As I was dropping the letter in the box I was aware my spiritual nature was waking up. The "alarm," or, if you choose, conscience, protested, and I looked at the coins in my hand. I went back to the girl and said:

"Did you not make a mistake? Twenty-five two-cent stamps would be *fifty cents*."

"Oh! I guess I did," she replied, and I gave her back the quarter.

Nothing particularly wrong in the above, is there? I would gladly stop here; but I can

not, and be truthful. I put the half-dollar in my pocket and started to go away; but the "emergency brake" came down harder than ever. My impression, when I laid down the coin for the stamps, was that it was only .0 cts., but when 50 and 25 also *came back* with the stamps, I tried to persuade myself it must have been a *dollar* after all, and decided to let it go at that; but when I was just about to step out at the doorway I recalled that I had searched my pockets just before going to the office, and declared there wasn't a "whole dollar" in my possession. The conflict in my heart probably lasted only a second or two; but one may at times go over a good deal of ground in a second.

Satan, at least once, tried to tempt our Savior. On this occasion I can imagine he tried to argue with *me* in something the same way. He made three different points or reasons why I could honestly keep the coin I was fingering. First, he said, "In these busy times it isn't necessary to count the change you receive. It looks small. Push it in your pocket and go ahead with business. If anybody gives you too much, it is his affair, not yours."

Secondly, he put in, "You are not taking the *girl's* money—of course you wouldn't do that, but what is 50 cts. (that you *need* badly) in Uncle Sam's vast domain with his *tons* of stamps and dollars?" The above is a pretty tough confession for A. I. Root, is it not? Perhaps I *have* got it a little strong, just as my old father used to do in selling his colts; but the thought did cross my mind at least faintly. The conductor on a railway was once dismissed because he was "color-blind." He had gradually failed to see any difference in the "color" of the money belonging to the company and that belonging to himself. While I fingered the coin and procrastinated, the color of Uncle Samuel's stamps and money seemed *different* from that belonging to individuals.

My friends, this same "color blindness" that I have been describing will wreck our whole nation and send the whole of humanity to the bottomless pit if we can not get cured of it. Lastly, he suggested that, perhaps, I really *did* have a dollar in my pocket, and the girl was right about it. I suppose this *is* possible, but not at all probable under the circumstances. What ought an honest man and a Christian do when it seems impossible to decide *absolutely* whom the dollar really belongs to—your neighbor (or, perhaps, the great public), or yourself? In a case like this, where you *alone* must decide, what shall you do? Listen to the promptings of the "emergency brake" and say, "God helping me, I will suffer wrong, rather than do wrong, to the end of my days."

I went back once more to the stamp-window.

"I fear, my friend, you have made still another mistake. Do you remember what coin I gave you for the stamps?"

"Why, I supposed it was a dollar—was it not?"

"I am sure it could not have been a dol-

*I had lost a check I was expecting to get cashed at the bank.

lar, for I did not have a dollar in my pocket." After the coin was in the hands of the rightful owner the emergency brake dropped back out of sight, and I went about my business with a light and happy heart. We are told "a good name is rather to be chosen than great riches," and I want to add that a clear conscience is worth more than all the stamps and money the whole wide world contains. Shortly after, my missing check came in a letter from a Philadelphia firm, saying I had doubtless sent it by mistake.

POULTRY DEPARTMENT

By A. I. ROOT.

OU'GENERALING THE "VARMINTS," ETC.

I told you in my last that the possum pulled out of our best steel trap twice. Well, after he had in like manner pulled out *five times* I went to the drugstore and got a dime's worth of strychnine, and two big fat possums were found laid out next morning. Later we found another, and three skunks also. No wonder we had trouble with our chickens. A neighbor, Mr. Raub, and, by the way, an old bee-keeper from York State, said our traps were not *set* right. He showed Wesley, so that we are now getting rats and skunks every few days. I have told you the rats of the United States cost our people a *hundred million dollars* every year. How much do prowling wild animals, such as possums, skunks, weasels, etc., cost poultrymen? We have many visitors; and almost every one, no matter what State he comes from, can relate a similar experience in trying to raise chickens. The most of them give it up, and pronounce chickens "too risky." Shall I give it up? Not much! We have an inch-mesh netting put down into the ground, all around our two acres. When we find a place where they have dug under, or *tried* to, we set traps there. My neighbor Rood said my war on these pests was a great blessing to this whole neighborhood.

I do not know that I ever made any thing that gives me more pleasure and satisfaction than the brooder house I have mentioned. I expect to give you a picture of it soon. The netting stapled to the sills goes down into the ground a foot; and just a few nights ago some animal dug down against the netting in several places all around the house. How did he know there were two brooders full of ten-day-old chicks inside? The brooder-house secures three very important things: absolute safety from prowlers; a nice warm place out of the wind when it is cold, and a safe dry place to ramble and play and scratch when it rains or when the grass is too wet to go out.

Not only is there a satisfaction in beating the enemy, but it is something like this:

My neighbor Rood says, with a comical smile on his face, when we have a touch of

frost, "If it kills all the stuff north of us there will be no glut in the market, and we Manatee Co. people will get better prices."

Now, don't think from this that Mr. Rood is not a Christian in his planning. He looks at it this way: There is nothing very wrong in looking forward, and planning by every means in your power, so as to have a good crop at just the time many or most people fail. We should be ashamed of giving way or giving up to *preventable* troubles like those I have mentioned.

After I had fenced out and des'troyed the skunks, rats, and possums, I had only six chicks left of the 70 that came out of the incubators, and one day a hawk came into the doorway, within a few rods of where I was standing, and got one of the six; but I yelled to such purpose that he dropped him. The chick limped about for a day or two, but now is all right. Mr. Rood came over with his gun, but didn't quite get a shot at the bird. As hawks took a chick or two last winter I have on hand enough three-inch-mesh netting to fence *overhead* a chickenyard 40x75 feet. As no more hawks have appeared, however, we are awaiting further developments. I have taken off another hatch with my two incubators (Cyphers and my own). Quite a few eggs were tested out in five days, and more later; and finally a large number in *both* machines died in the shell after being fully developed. My own incubator gave about 70 per cent of the fertile eggs, while the Cyphers this time gave only about 55. The chicks are now about ten days old, and the two lots are kept separate. Four have died from the Cyphers brood, but none from mine. I fully expected the Cyphers would be ahead, and I can not account for so poor a hatch, especially as I ran it exactly according to directions in a good incubating-cellar.

The Cyphers chicks are in the Clough lampless brooder. My own are in a lampless brooder that I received *by mail* from Boston. It is called the "Lullaby" brooder; and for use in a brooder-house I should place it ahead of all other brooders, not even excepting my own basket brooder. It seems to embrace, more than and other brooder, the principle I have so vehemently enjoined for both chicks and humans; viz., keeping the body warm while the breathing apparatus is right out in the *pure cool* air. The Lullaby is essentially a round box made of corrugated paper and cloth. This box or circle can be let out so as to enlarge it as the chicks grow and need more room. For instance, 25, when first out of the incubator, can squeeze inside of a box about the size and shape of a half-peck measure; but when in such close quarters they must have air; and to let them get it "straight and pure" there are two oval "bay windows," 2½ in. high and 4½ wide. These windows are also used as doors; but at night a row of little heads, even in cool weather, is always close up to both windows. A cushion is arranged with a rattan spring so it will keep its place just over their backs. In such a circular nest

the collective animal heat from 25 little fluffy bodies keeps them abundantly warm, even on frosty nights. As with all other lampless brooders, feeble ones, if there are any, seem to need a little heat on cool mornings when all the rest are out running about. It is made by the Park & Pollard Co., 46 Canal St., Boston, Mass. It cost \$1 50, and I think it is worth almost that much to get the idea.

ANOTHER "DISCOVERY."

I told you the only rat-proof feed hopper I knew of was a tall tin can that the rats could not jump into nor out of, and I said such a can would also bother many of the chickens. Well, listen: Get a galvanized iron tub for 50 or 60 cts. Set it in the middle of the poultry house on the ground until all your chickens, old and young, learn to go there for feed. When they all understand it, raise the tub up a little, and finally hang it by three wires from the rafters overhead. If your fowls have access to the house by only a small door near the ground it will be a long time before the sparrows find it. In warm weather, when the doors and windows are open, all such openings should be covered with inch poultry-netting.

POULTRY SECRETS, RECIPES, NEW SYSTEMS, ETC.

I am still investing my money, and sometimes I get a little something valuable. Such books as the Corning Egg-book, however, by the *Farm Journal* people, are worth five times their cost. That is, the price is marked 25 cts., and it is well worth more than a dollar; while the "Miller system," price \$1 25, is hardly worth 25 cts.—see page 718, Nov. 15. I sent the money for the book early in November, but it did not get around until about Jan. 15th. It is a cheap paper book with but a small amount of matter (in very large type) on each page. The plan for warming a brooder at an expense of only " $\frac{1}{2}$ of a cent a month" is by a manure hotbed, and I will only ask market gardeners what they think of keeping up the heat in a hotbed at the above figure. There isn't a picture, not even of a poultry-house, in this whole \$1.25 book; but there are three or four very good diagrams of feed-hopper, automatic nest, etc., in the fore part of the book. I should say the things he tries to describe are altogether too complicated. I couldn't make such a hen's nest from his description, to save my life. The great secret of feeding a hen a whole year for only "five cents" is, so far as I can understand, by selling the manure for almost as much as the grain costs. Where is there such a market for it? The way to make \$60 a year from each hen is to set every egg and "work for nothing and board yourself." If you carry out the "System" in full, he says you can make \$120 from each hen; and *The Poultry Culture Monthly*, that has been giving the "Miller system," such tremendous write-ups, month after month, in one place says each hen will give her owner \$120 000 a year if the "system" is fully carried out. I suppose the figures are a misprint; but I have seen no correction of it as such. Perhaps it is just

as well to let it go that way, after all, so that others may get discouraged in their ambition to advertise (a "system") something still bigger than any predecessor.

Dear friends, have we not almost "systems" enough already? How about skunks, possums, hawks, etc.?

While speaking of poultry-books I am glad to say some of the incubator catalogs are excellent books for the beginner. The "Artificial Rearing of Poultry," just out by the Prairie State Incubator Co., is worth more than some of the \$5.00 systems. It is written by an educated and I should say *Christian man* and tells the truth about what one may expect from the poultry business. The book is given away, while the "Miller System" costs \$1.25 with its exaggerated and practically impossible statements. It may be urged that the incubator folks have something to sell; but so have the Miller System people; and I doubt if one man in a hundred could make the Miller nest and hotbed brooder, no matter how he tried, from directions in the book.

A SECRET FOR MAKING CHICK FEED.

James M. Brown, Pell City, Ala., advertises a secret for 50 cts. for making a very superior feed for baby chicks as well as older ones. Well, this time the recipe is good, and I heartily indorse it; but, like almost all the others, it is by no means new. It is simply to roast or parch in a slow oven some corn, wheat, oats, Kaffir corn, sorghum seed, etc., and then grind it coarsely, according to the age of the chicks. I saw the recipe in "Miner's Poultry Book" sixty years ago, and fed my chickens parched corn ground in a coffee-mill, and have used the same more or less ever since. By the way, if you can get some nice clean grain you will find this process will give you about the most delicious and wholesome breakfast food you ever ate, and it is also the *cheapest* food one can live on. Grind it in the little mill I have described on page 30, Jan. 1. The *Practical Farmer* has recently described parching wheat before grinding in the little mills. Serve with a bowl of milk, and see if you do not consider it an acquisition.

CAST THY BREAD UPON THE WATERS, FOR THOU SHALT FIND IT AFTER MANY DAYS.—ECC. 11:1.

The following came as a postscript to a kind letter from one of our readers now 67 years old. May God be praised for such testimony. Are there any more of the "veterans" who received a smoker and "kept the pledge?"

It is now about 30 years since I received the gift of a smoker from you, conditioned on my discontinuing the use of tobacco. I have never used tobacco since. I have often wondered how I could have been so selfish all those years in gratifying my own pleasure in a manner so offensive to others from a simple want of thought, for all through my long life I have always been considerate of the feelings of others; but only in the use of tobacco did I fail to realize the enormity of my selfishness, and I have always since connected the name of A. I. Root with that kindly action in days long passed by.

Ferndale, Wash.

A. W. THORNTON.

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EDITORIAL

By E. R. ROOT.

THE IMPORTANCE OF THE WINTER NEST.

ONE of our subscribers, Mr. R. C. Hugentobler, of Miami, Ohio, has this to say of the importance of a winter nest:

As I have supplied many colonies with sealed stores, and taken many observations, I find that what you say in regard to the winter nest is true. I have found that colonies supplied with sealed stores are invariably not clustered on them, but hang to the dry empty combs, and starve, sometimes, when in touch with the sealed stores. These observations prove conclusively to my mind the great importance of a winter nest in outdoor wintering.

PRICES ON HONEY NOT KEEPING PACE WITH OTHER FOOD PRODUCTS.

In looking over the back volumes of GLEANINGS for 1877, we noticed how Adam Grimm reported that he was getting 25 and 30 cents a pound for his extracted honey; that he thought 25 cents was low enough. This makes rather interesting reading when we consider the present price of extracted honey, and that all other articles of food have advanced. The reader, in this issue, will be interested to follow the discussion of this question by Mr. O. L. Hershisser, on page 140.

DANGER FROM DEAD BEE-CLOSED ENTRANCES.

At this time of the year, especially after a very severe winter such as we are now having, it will be very important to see that dead bees accumulating in the entrances of outdoor-wintered colonies be raked out. An entrance closed with dead bees, snow, and ice usually means death to a colony. There is great danger that hundreds of colonies in otherwise good condition may be lost through a lack of attention at this season of the year. If the outdoor-wintered bees have absorbing cushions the results will not be as fatal; and that, by the way, is one thing in favor of that kind of wintering.

WINTER LOSSES.

It begins to look now as if there would be heavy losses of bees in some sections. The winter thus far has been one of the old-fashioned kind, with almost continuous cold without any flying days. This, for our locality, is something unusual. While our bees are wintering nicely because we fed a large amount of sugar syrup, we have been a little fearful that the large amount of

honey-dew, where no syrup was fed, together with the extremely cold weather, was going to have a bad effect upon other bees.

AMERICAN HONEY REFUSED ADMISSION IN SOUTH AFRICA.

THE following letter, received from the Bureau of Entomology, will explain itself:

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY,

Washington, D. C., Jan. 3.

Mr. E. R. Root:—It has come to the notice of this Bureau that certain shipments of honey from California, which were sent to England and there bottled and shipped to the Cape of Good Hope, have been refused admission to that colony under Proclamation No. 394 of 1908 of the Governor of the colony. This proclamation states that, since "the disease known as 'foul brood' exists or is supposed to exist among bees in Australia, New Zealand, the Continent of North America and the Continent of Europe, including the United Kingdom and Ireland," the importation of honey from these countries is prohibited "except under written permit previously obtained from the Secretary for Agriculture, under such restrictions and safeguards as may seem to him expedient or necessary."

This proclamation, therefore, prohibits the exporting of all American honeys to the Cape of Good Hope, whether or not either of the diseases of the brood exists in the apiary or apiaries from which the honey is obtained. Steps are now being taken to obtain permission from the Secretary for Agriculture to allow shipments of honey from healthy apiaries to be admitted to this colony when proper proof is presented that no disease exists. The form of permit or certificate must be determined by the officers of the colony. This proclamation puts a stop to the sale of considerable quantities of American honey which has formerly been sent to the Cape of Good Hope until some arrangement can be made with the Secretary of Agriculture. L. O. HOWARD, Chief of Bureau.

SOME OLD PATENTS BEARING ON SOME SCHEME FOR PREVENTING FOUNDATION STRETCHING.

In our last issue, page 99, reference was made to the fact that an inventor had lately patented a scheme for using paper in the midrib of foundation to prevent its sagging while being drawn out by bees. Having occasion to go over our file of patents relating to apicultural inventions, we ran across a patent issued to J. Y. Detwiler, May 13 1879, covering the use of perforated tinfoil in the midrib to prevent stretching. On Aug. 13, 1878, M. Metcalf took out a patent for the use of cloth dipped in melted wax and run through foundation-rolls or flat dies.

It was about this same time that A. I. Root used quite extensively paper in the midrib of his foundation sheets; and while he did not patent the same he wrote it up in GLEANINGS. He found that the bees, during a dull season, would discover the paper in the combs, when they would immediately begin to tear it out. They seemed to think it

was the silken galleries of the mothworm, and they treated it accordingly. We had hives of Italians that just fairly riddled their combs after they had been nicely drawn out.

All these different schemes for fixing foundation so it will not stretch are quite alluring; and to one who has never worked them out, any one of them appears to be perfectly feasible; but "there is many a slip 'twixt the cup and the lip" in apiculture.

In this connection perhaps it would be interesting to note that Capt. J. E. Hetherington, the one-time largest bee-keeper in the world, patented the plan of using wires imbedded into foundation. Two patents were issued to him—one dated August 28, 1878, and July 14, 1879. The first patent covered the use of wires in any foundation, whether having natural base or flat base. The second was limited to the use of wires in flat-bottom foundation.

SOMETHING MORE ABOUT RYE MEAL AND BROOD-REARING.

AFTER the experiment of feeding rye meal under glass I made examination of our colonies outdoors and found quite a number without a particle of pollen, and, as a matter of course, *no brood*, although the queen laid eggs every day. As the weather was such the bees could not fly, I began experimenting with rye flour mixed with honey so as to form a sort of dough, and was delighted to find this food started brood at once, just as the rye did in the greenhouse. Whenever or wherever colonies are found destitute of pollen I feel sure it will pay to supply it in this way until they can get it from natural sources. As it sometimes gets so hard in the cells that even the bees seem unable to remove it, we should be careful to give them only about enough for present use. I think this matter is given at length in our early volumes; but I have no access to them here in my Florida home.—A. I. R.

CARBOLIC ACID WILL NOT KEEP BEES AWAY FROM POISONOUS SPRAYING-MIXTURES.

REFERRING again to the statement made p. 611, Oct. 1, by B. W. Harrington, in regard to carbohc acid being used in spraying-mixtures to repel the bees and prevent them from being poisoned, we have found that quite a little interest has been shown by our readers. Mr. J. L. Byer, page 778, Dec. 15, reported that it was his belief that this was all a mistake. Prof. Surface's opinion was used in our last issue, page 127. We are just in receipt of a letter from Prof. C. P. Gillette, State Entomologist for Colorado, which explains itself.

I have not heard of carbohc acid being used in spray materials to prevent bees from being poisoned. Unless some one has tested this plan and found it to work satisfactorily, I should be very much inclined to doubt its having any repulsive effect upon the bees. Entomologists have used various odorous substances for the purpose of preventing insects from attacking the plants, but almost wholly without results. It is the instinct of the honey-bee to visit the blossoms that contain pollen and honey, and I do not believe it would be practical to use enough carbohc acid in spray material to drive them away. It is a grave mistake for

any fruit-grower to use an arsenical spray for the purpose of killing codling moth before the blossoms are practically all off his trees. I have talked this to the apple growers in Colorado for the past 19 years, and I do not think we have any trouble at the present time from orchardists spraying their trees while they are still in blossom. We did have some trouble, however, a few years ago along this line.

Fort Collins, Col.

C. P. GILLETTE.

YOUNG PEOPLE WHO HAVE PAID OR ARE PAYING THEIR WAY THROUGH SCHOOL FROM MONEY EARNED FROM KEEPING BEES.

MARY ROGERS MILLER, 340 Rahway Ave., Elizabeth, N. J., is writing a book for Doubleday, Page & Co., of New York, on outdoor work for young people. She has given considerable space to the subject of bee-keeping. One part of the book is to be devoted to stories of real boys and girls who have made all or a part of their college expenses, their pin money or pocket money by engaging in some form of outdoor occupation. Mrs. Miller is particularly anxious to get in touch with young bee-keepers who with the money they have earned have gone through school or college. We hope that any subscribers who know of any such persons, or who themselves, in fact, come under the class mentioned, will write to Mrs. Miller direct.

In the meantime we have been informed that a daughter of Mr. J. F. McIntyre, one of the extensive bee-keepers of California, paid her way entirely through college with the money that she made off from her own bees. There are doubtless many others among our fraternity who have done the same. All interested should write to Mrs. Miller at once.

KEEPING ALFALFA COMB HONEY FROM GRANULATING.

A YEAR or so ago, our readers will remember that we conducted some experiments in an incubator to determine whether we could bring candied comb honey back to a liquid condition without melting the comb. We partially succeeded; that is, we succeeded to the extent that the candied particles in the honey were liquefied, but the temperature necessary to do this caused the comb to sag a little. That temperature was 106. Last winter we tried the experiment on a larger scale, but did not allow the mercury in the thermometer to go higher than 103. While we could not at this temperature undo the work of granulation, we arrested its progress almost instantaneously. This room was about 6×6×7 feet high. It had a steam radiator in it and an automatic regulator to control the temperature.

Again, this winter we noticed that quite a little of our last two carloads of alfalfa comb honey were beginning to granulate slightly. Something had to be done at once. We selected a room of sufficient size to hold the honey, and put in additional steam radiation till the temperature could be brought up to about 90. Here the honey was stored and it has been there for the last month. It was gratifying to observe that the progress of granulation was arrested at once.

From all the experiments we have conducted, we have concluded that it is not practical to liquefy the granulation in comb honey. We can arrest the progress, when it just starts, at a temperature of 90 degrees. If it has progressed a little further a higher temperature would be required to stop it. Those who have honey stored in large quantities, especially if it be alfalfa, should remember the very great importance of keeping it in hot rooms. We have visited many commission houses in the country, and too often the rooms where the honey is stored is down to a temperature of about 60. Ordinary farm produce can be kept better in a room like this, no doubt, but honey should be put into the warmest, hottest, driest place on the premises. The average commission man and honey-buyer can well afford to put in extra radiation in some special room where his honey is stored—enough radiation to hold the temperature approximately between 85 and 90 degrees *night and day*. It is important that this temperature be kept *uniform*. It will not do to have the thermometer show 90 degrees at one time and 60 at another. This is just the very thing that will hasten granulation.

In some of our early experiments we determined that alfalfa honey may be stored in a room that is kept at zero temperature for almost two weeks steady and yet no granules will show; but the minute it begins to warm up, changing from warm to cold, then the honey will begin to cloud and finally turn into a solid condition. Apparently, then, a very cold temperature or a very warm temperature is less favorable to granulation than any point between; but we would by no means advise any one to put his honey in a room subject to a zero temperature. Comb honey, of course, would be frozen, combs would crack and the goods would be ruined.

FORMATION OF THE OHIO BEE-KEEPERS' ASSOCIATION AND THE INTRODUCTION OF A STATE FOUL-BROOD BILL.

THAT the bee-keepers of Ohio have not been idle during the past few weeks will be shown by a report received from the secretary, Mr. Henry Reddert. We take pleasure in presenting it here at this time.

Feb. 3 and 4, 1910, the Ohio bee-keepers met at the Neil House, Columbus, Ohio, and organized the above-named association. The following officers, to serve for one year, or until their successors are chosen, were elected:

President, J. F. Moore, Tiffin; Vice-president, Henry Shaffer, Westwood; Secretary, Henry Reddert, Cincinnati; Treasurer, C. H. Weber, Cincinnati; Executive Board, E. R. Root, Medina; Henry Hastings, Kenton; Dr. P. E. Cromer, Springfield; D. H. Morris, Springfield; Pearl McIntire, Springfield; Edmund W. Pearce, Zanesville.

A bill was drafted having the general features of the one recommended by the Bureau of Entomology, at Washington, D. C., authorizing the State Board of Agriculture to establish a "Division of Apiary Inspection" in the Ohio Department of Agriculture. This bill provides that the Board shall appoint a competent entomologist as chief inspector of said division, with power to appoint the necessary assistants, who shall, under the direction of the board, have charge of apiary inspection. Mr. A. P. Sandles, Secretary of Agriculture, and several Representatives of the different counties of the State were seen, and the provisions of the bill explained.

All the members of the association present were very enthusiastic in the work before them, and expressed the hope that this bill will clear the bee-yards of foul brood and all other diseases common to the honey-bee. Mr. E. R. Root worked like a beaver. He acted as a spokesman, and introduced the association committee to the Secretary of Agriculture in the capitol building. In clear and concise language he explained to that gentleman the wishes and wants of the Ohio bee-keepers. He made so favorable an impression that the Secretary offered a column in the *State Agricultural Journal* to further the art of bee-keeping. In a few days the bill will be ready for introduction to the General Assembly. In the mean time every bee-keeper in the State should call the attention of his Representative to the bill when it comes up for discussion and passage, and ask him to support and vote for it.

The various bee-keepers attending this convention came to this meeting for the sole purpose of clearing the bee-yards of disease, and such efforts should in every way be crowned with success. The bill will appear in GLEANINGS in due time. Next year, probably in January, when the horticultural societies meet in Columbus, the Ohio bee-keepers will hold their next annual convention. In the mean time the officers of the association will communicate to each other every detail enhancing the growth of the State organization, getting all the bee-keepers they can to join.

Communications should be sent to Henry Reddert, Secretary, 2300 Schoedinger Ave., Lick Run, Cincinnati, Ohio.

Perhaps we should explain that the bill which the bee-keepers of Ohio are about to have introduced in the legislature does not call for any special appropriation. It was found that the present legislature would be very much disinclined to pass any bill carrying an appropriation of \$500 or \$1000. Prof. N. E. Shaw, State Entomologist, and Mr. Sandles, Secretary of the Department of Agriculture, very kindly offered to take care of the work of inspection out of the general appropriation granted to their Department, providing that, for the first year, we bee-keepers do not make too heavy a demand upon them. For the present, at least, if the bill is made into law, granting police authority to the State Entomologist, he could appoint one or more of his nursery inspectors to act also in the capacity of inspectors of apiaries. This could be done for the first year, or until more funds are available, to save expense. While the objection might be raised that nursery inspectors would not be competent to pass upon the diseases of bees, it will not take them long to become informed regarding the nature of the two principal bee diseases that are so destructive in the United States; and, besides, the members of the Ohio State Bee-keepers' Association have offered to render them every assistance, not only in informing them *where* disease exists in the State, but *how* to recognize it. For the first few trips it will doubtless be necessary for the inspectors to call in one or more competent bee-keepers in the locality to advise.

While the amount available for inspection work will probably not be large this year, yet if we can *once get this bill through*, granting police authority to the State Inspector (the State Entomologist), the Secretary of Agriculture a little later on can make provision for the necessary funds to carry on this important work properly. Both Prof. Shaw and Secretary Sandles seem very willing to help us.

STRAY STRAWS

By DR. C. C. MILLER, MARENGO, ILL.

HOW SOON after a colony becomes hopelessly queenless may laying workers set up business? [This is something that varies according to the strain of bees and conditions. With Holy Land bees, laying workers will develop much more quickly than with Italians. Cyprians come next.—ED.]

FOOD-INSPECTOR DODGE, testifying before Congressional committee, gave prices of necessities of life in 1897 and now. Of 16 leading items, the advance has been from 33 to 145 per cent. The sum of their prices is now 76 per cent higher than it was. Can any one figure out that honey has advanced 76 per cent?

F. DUNDAS TODD, you wanted to feed a pollen substitute Jan. 1, and it sounds a little as if you thought bees died for want of pollen, page 122. I don't believe a bee died from that cause, and in winter not a grain of pollen is needed, nor until time for brood-rearing to begin, for no brood can be reared without pollen. Notice, the editor says *brood* died for want of pollen but not bees.

FOR ROBBER-TRAP escapes, p. 116, why not two cleats nailed on hive-wall, V-shaped, with wire cloth nailed on flat? Your presentation has converted me into a belief in robber-traps. [Possibly a bee-escape could be made in the manner you describe, especially if made double; but the wooden cleats would be more inclined, in our judgment, to direct the entrapped workers back to the point of apex through which they could get back by the way they came.—ED.]

DOBBRATZ says, *Wegweiser*, 9, that fertilization of a virgin may occur when she is even 6 weeks old, and only in the rarest cases will she become a drone-layer before that old. If she once starts drone-laying she will never be fertilized. If within this time drone brood is found, it is certain that laying workers are present, and will continue work until the queen begins laying. He and others have had laying workers thus begin with a queen-cell or a virgin present.

"QUEENS reared late . . . may not be the equal of those reared early in the season," p. 108. I'm afraid some beginner will understand that "early" to mean before there is any honey-flow. In this locality the normal time for queen-rearing begins with the white clover flow unless sometimes in a heavy dandelion or fruit flow. A queen reared before this time is apt to be worthless, and I don't believe any amount of feeding will make her good. On the other hand I *think* feeding may make a good queen after the honey-flow is over. At any rate I would much rather have a too late queen than a too early one. [Thanks for correction. We meant by "early queens" those reared just about the approach of a honey-flow. We do not agree with you, however, that an early-

reared queen raised, say, in May, can not be as good as one reared in August. If one knows thoroughly the art of queen-rearing he can, by a process of making a colony combless and broodless, and feeding, produce results that are as good as those secured during the swarming season; and in this connection it is proper to state that not all swarm cells by any means are first class. Many of them are much inferior to those reared under artificial conditions. Nature does not always do better than science; but as a rule science can not often hope to excel her.—ED.]

SUPPOSE each of 100 colonies to have its queen removed and at once replaced by a virgin just hatched; how many of the 100 will swarm with the young queen? In other words, how many chances in a hundred are there that a colony thus treated will swarm? [Instead of asking the question we wish you had answered it yourself to the best of your knowledge. We infer from the way you *put* the question that you think the number of colonies that would swarm with a young queen would be small. Is our inference correct? In the mean time, perhaps you would like to know *our* views. We have nothing very definite to offer except that colonies with young queens are much less inclined to swarm than those with old ones. What the proportions would be we could not say. One of the most extensive bee-keepers in Ohio, Mr. Henry Hastings, of Kenton, told us that it was his practice at the beginning of the honey-flow to kill the old queen, and in eight or nine days destroy all the cells but one and allow the virgin issuing therefrom to become the mother of a colony. By so doing—and he is an extensive producer of comb honey—he controls swarming almost entirely.—ED.]

HOW MANY fielders are in a colony of 50,000 bees? If a queen has been laying the same number of eggs each day for many days, if the average life of a worker is 6 weeks, and if each bee spends 16 days as a nurse before becoming a fielder, then $\frac{1}{6}$, or 19,048 bees, will be nurses, and $\frac{2}{3}$, or 30,952 bees, will be fielders. Earlier, when the daily output of eggs is on the increase, the proportion of fielders will be smaller; later, when the output is on the decline, the proportion of fielders will be greater. I am not ready to swear to those figures, and if any one has a better answer I'll be glad to get it. Even if my figuring is correct for a strong colony, it will not be correct for a weak one; for enough bees must stay home to keep the babies warm, even if it makes them stay till they are much over 16 days old. [Your figures are doubtless fairly correct for average conditions; but we know that, under abnormal conditions, nurse-bees will assume the function of fielders, and old bees the function of nurse-bees. Assuming that your figures are fairly correct for average conditions, they go to show the importance of strong colonies in order that the proportion of fielders may be sufficiently large to get the honey that is in the field.—ED.]

NOTES FROM CANADA

BY R. F. HOLTERMANN.

PROVINCIAL GOVERNMENT ESTIMATES.

The Supplementary Estimates for Ontario contain the following items of interest to bee-keepers: An increase of \$500 to provide for inspection of apiaries and traveling and other expenses in connection with apicultural work; \$1200 to provide for lecturer on apiculture at the Ontario Agricultural College, and \$750 to provide for equipment and maintenance of the Apicultural Department. I understand, however, that there may be some further provision.

Later.—The provincial apiarist's salary is now \$1500.



THE NORFOLK BEE-KEEPERS' ASSOCIATION.

This association was organized Jan. 13, 1882. It has had 97 meetings, and has been one of the most active local associations in Ontario. In progressive movements it has been well in the lead, particularly in late years. More than one plan which it has instigated have been brought to maturity. Its present officers are, Edwin Trinder, Pres., Simcoe, Ont.; John Murphy, Silver Hill, Ont., Vice-pres.; and Lee Beaupre, Forestville, Ont., Secretary and Treasurer. All of these are men who, when they undertake a work, do not readily turn from it. Messrs. Trinder and Murphy are well known in other activities. The Secretary, Mr. Beaupre, has been a hard worker in the interests of the association, and deserves the thanks of the bee-keepers in the section of the country which covers its activities.



BEE-KEEPING IN RUSSIA.

On page 23, *British Bee Journal*, there appears a very striking editorial on the above subject. It contains in part as follows: "It is said that in the government of Ekaterinoslav, in South Russia, there are nearly four hives to every inhabitant." If I mistake not, the district referred to is somewhat densely populated, and it would be highly interesting in this connection to have some information on this subject. In any case, in this country many would be inclined to think four colonies to every inhabitant would be overstocking with a vengeance. Again, "In Little Russia, before its union with Russia proper, there existed a time in bees, which consisted in carrying to the seignior a tenth part of all the honey produced in the hives. At the beginning of the eighteenth century a single forest domain of the government of Kiev paid the seignior annually as much as 200 barrels of honey, each barrel weighing 361 lbs." This means 72,200 lbs.



QUEEN EXCLUDERS.

On page 26, Jan. 1, a writer discusses the question of using queen-excluders, doing it in a fashion all too common on this side of the ocean. D. M. Macdonald, Banff, who is

beginning to be known as an apicultural writer, has previously, in defense of the use of queen-excluders, quoted such men as Dr. Miller and Mr. Doolittle. - Then he states, as regards "advanced" American bee-keepers, "let us look at just a few of their up-do-date methods." Then Dr. Miller is shown up as a man who does not paint hives, and, "incredible as it may appear, actually places a diseased comb for several days in the hives containing the turned-out (diseased) lots."

Then Doolittle has it thrown up to him that "He puts a couple of boards on the ground in the apiary, and piles thereon his reserve supers of honey, with no other protection than a hive-cover on top; and there they remain from October to the middle of June."

These practices would certainly, in my estimation, be very bad; but if it is all a correct statement, there has nothing then been said in favor of the abandonment of queen-excluders. As long as I can secure queen-excluders I do not care to do without them; in fact, I would almost as soon do without comb foundation in the brood-chamber.



AN ACT RESPECTING THE RIGHT OF PROPERTY IN SWARMS OF BEES.

The Hon. J. S. Duff, Minister of Agriculture for Ontario, has introduced an act in connection with the above which will, no doubt, become a law, as it is a government measure.

"Bees living in a state of freedom shall be the property of the person discovering them, whether he is or is not the proprietor of the land on which they have established themselves. Bees reared and kept in hives shall be private property. Where a swarm of bees leaves a hive, the owner may reclaim them so long as he can prove his right of property therein, and shall be entitled to take possession of them at any place on which the swarm settles, even if such place be on the land of another person; but the owner shall notify the proprietor of such land beforehand, and compensate him for all damages.

"If a swarm settles in a hive which is already occupied, the owner of such swarm shall lose all right of property therein.

"An unpursued swarm which lodges on any property, without settling thereon, may be secured by the first comer unless the proprietor of the land objects.

"If the owner of a swarm declines to follow the swarm, and another person undertakes the pursuit, such other person shall be substituted in the rights of the owner, and every swarm which is not followed shall become the property of the proprietor of the land on which it settles, without regard to the place from which it has come."

"FLOURING" BEES SHAKEN IN GRASS.

Instead of shaking bees on to the bottom of the hive I shake out in front of the hive several feet away. When ready to drop the queen among them, sprinkle flour on the bees. They will get into the hive in one-fourth the time it would take to smoke them in. It seems to demoralize them completely.

Colo, Iowa.

D. E. LHOMMEDIEU.

BEE-KEEPING AMONG THE ROCKIES.

BY WESLEY FOSTER, BOULDER, COL.

ANGLE OF CELLS BUILT FROM FOUNDATION.

Dr. Miller, the reason for the *side* of the cell being horizontal in comb built from surplus foundation and the *angle* of the cell pointing to the top in the brood foundation, p. 23, Jan. 1, is that the surplus foundation is cut across the width of the sheet while the brood foundation is placed in the frame lengthwise; so if you would attach what was the side of your foundation sheet to the top of the section the angles of the cells would point the same as they do in brood foundation and in most natural-built comb.

GLASS-FRONT CASES.

Mr. Crane, page 37, Jan. 15, thinks the unglassed paper case will sell in competition with the glass-wood case. If the paper case would ship more safely than the wood case it might be true. I do not doubt that the paper case would outsell the single-tier wood case; but the double-tier case will ship much more safely than the single tier.

When the buyers will pay 10 to 15 cts. more for honey in double-tier glass front cases than for that in single-tier wood-slide cases, it is reasonable to suppose the bee-keepers will supply the better-priced article.

DEPTH OF SHIPPING CASES.

On page 455, Aug. 1, I had reference to the double tier case needing an eighth-inch space over the sections. More space than this would endanger the sections should the case be tipped on end or upside down. It would not do at all to make the single-tier case with a 1½-inch space over the sections as Mr. Crane suggests on page 758, Dec. 15. What would happen if such a case should go on its side or end, or clear over? and yet I do know that the covers sag as Mr. Crane says, when stepped upon, and that is the chief fault with the single-tier case. The double-tier-case cover will not sag more than a sixteenth of an inch, because the heel and sole of the shoe reach nearly across the cover.

THE SOLAR EXTRACTOR.

No method of melting and molding wax can excel the solar wax-extractor when properly handled. Refuse must be kept out of the molding pans, and this can be done by having the screen form an obstruction to the melted wax so the bits of foreign matter will settle or lodge. The screen makes all the better sieve if it is clogged with slumgum and cocoons.

The extractor should be opened in the morning early before flies are about. The practice of leaving a cake of wax in the extractor from day to day is a poor procedure. The cakes form in layers, and refuse is almost sure to be between the layers. Take

out each day's run the next morning before or about sunrise. It is better to have thin cakes than thick layer cakes with dirt sandwiched between.

CORRUGATED-PAPER SHIPPING-CASE.

Too much can not be expected of the strawboard case. Several cases of these came to Denver from a distance of several hundred miles. The shipper apparently thought they would stand any amount of rough handling by the express company, for no marks were put on to tell what the contents were. Three-fourths of the honey was broken out; and what was not broken was cracked badly. A wood case with glass front would go through much better, for the fragile character of the contents can be seen. The strawboard case will stand rougher treatment than the wood case, but it must not be dropped far in cold weather.

HONEY GRANULATING.

When honey in the comb begins to granulate, the granules form around the sides of the cell, leaving the center liquid. Perhaps this is not true in every case, for in some samples in which the honey was getting mushy, I have found all the honey in the cell of like consistency. Most of the honey here in the West, however, begins to granulate on the sides of the cells, and then spreads throughout the cell. Often quite a little time passes before the honey is candied solid. Some combs will remain a third candied for five or six weeks. Where the granules have formed only on the sides of the cells it is very difficult to tell whether the comb honey is candied or not without breaking the cappings. These combs, if held up so light will shine through, often look clear and bright, though not quite so clear, I imagine, as the article that is wholly liquid.

BAITS IN SUPERS.

The use of a bait in the super is to start work above before the brood-nest is so crowded that swarming soon results. Baits placed in the corners will not be worked in much more quickly than sections of full starters in the center of the super. In my opinion a colony that will work in any part of a super is strong enough in bees to do good work above if the flow is daily getting better. Bees will not fill four or five baits in the center of a super till there is a rather plentiful amount of stores below. In this country I know the control of swarming hangs around the few days after the lower hive is well filled before we get the bees fully convinced that supers are the next on the program and not swarming. This whole question of placing baits depends on what the aim is. With our bees baits are used to get super work started, not to insure uniform super work; that can be had by spreading the nearly finished combs to the outside when the bees are fully possessed with the super idea.

CONVERSATIONS · WITH DOOLITTLE

AT BORODINO, NEW YORK.

IS AN EXTRACTOR NEEDED FOR 23 COLONIES?

"I have been in the business only two years, and have twenty-three colonies at the present time. Mr. Jones told me yesterday that I should have an extractor, as many hives would often have too much honey in them in the spring; consequently the queens would be cramped for room to deposit their eggs, and that in such a case I could use an extractor to advantage to give the desired room, and at the same time put a stop to any inclination to swarm. In all of his experience he said he had never had a swarm at any time when the queen had been supplied with plenty of empty comb in the brood nest. He further said that, in this way, I could be sure of having very strong colonies when the honey harvest commenced in earnest; and in case of a short flow I could secure quite a crop of extracted honey, while if I depended on comb honey I would get lots of swarms, with very little or no salable honey in sections."

"Well, Mr. Smith, there is some truth in what he said, and some things which are not what a practical apiarist would advise. That you could secure some extracted honey in a season with only a few days of honey flow is true; and that you would not have any swarms where the queen was supplied with all of the empty combs she could use for laying purposes, is nearly correct, though there are a few who claim that they have more or less swarming, even under such circumstances. But when Jones recommends extracting the old honey in the combs which the bees stored the year before, most practical bee-keepers would tell you he was making a mistake. In most if not all localities such honey is needed for brood-rearing before nectar of any amount comes in from the early or spring blooming flowers, and to extract it for the fun of feeding it back again would not be considered a paying job, as most of us believe that brood-rearing will go on just as prosperously, if not more so, when there is plenty of honey in the hive, without taking out some of it and feeding it back. Labor is one of the great problems in apiculture; and extracting this old thick honey, and then thinning it and feeding it warm, a little at a time each day, makes the labor problem very much greater than it is otherwise."

"Then you would not advise me to buy an extractor to use in that way?"

"No, I would not. But no person having as many as 20 colonies can afford to go without an extractor. Have you not had some colonies that were adverse to going into sections? or others that had the swarming fever, so that a whole season passed without a proper surplus? When you find colonies which are reluctant about working in the sections, just take a hive filled with combs

to one of them; open the hive and take out one or two combs of brood, and replace with an empty comb or two, as the case may warrant; then place a queen excluder over the hive, and on this excluder put the hive you brought along, and, when spacing the combs in it put in those you took from the old hive, after shaking the bees off, so you are sure you do not get the queen. You will now see that work takes the place of loafing. When the bees have those combs filled with honey, which they will have in a week or so, the extractor comes in play by throwing out that honey; then, on the return of those emptied combs, the bees will work with renewed energy to fill them again. Again, some colonies seem bound to store the larger part of their honey in the brood-combs, thus crowding the queen and causing swarming, or leaving too few bees for winter. Especially is this the case where the dark or leather-colored Italians are kept.

"An extractor and the treatment I have been telling you about are almost the only salvation, if I may be allowed that expression, the apiarist has with such bees. They are excellent for extracted honey; but on account of their propensity to crowd the brood-chamber with honey, and cap their honey so it has a watery or greasy appearance, they are better for extracted than comb honey."

"I am glad you touched on this subject, for I had several colonies last year of these dark Italian bees that filled their hives full of honey, but put very little in the sections; and what they did put there was so miserably capped that I had to take second price for it by the side of what was made by my blacks."

"If you have an extractor, with such colonies you can become master of the situation, and secure a good return in extracted honey, which, when the selling price of this is added to that from your section honey, will bring the total amount to where you will have a good showing from each colony."

"But how can I dispose of so much?"

"You would have no trouble at all with what you get from your 23 colonies. As fall draws near, at which time every family wishes honey, even though they may not wish for it strong enough to come to you for it, take a sample of this extracted honey and leave from two to four ounces at each house, telling the people, and especially the children, to sample it, quoting the price you have decided to sell at, and say you will be around with the honey on such a day. When the day comes, take it to them and see if you do not dispose of three times as much as you had hoped to. After this one baiting of all the families within a radius of five miles of your apiary, all you will have to do in future years is to let it be known that you have such extracted honey for sale, and you will find yourself short each year, if you produce the good thoroughly ripened sort, which you should always do."

"How much would you think a market built up in that way would take?"

"From 1000 to 5000 pounds, depending on the population or the number of villages."

GENERAL CORRESPONDENCE

SOME OBSERVATIONS ON MARKETING HONEY.

Unequal Distribution; the Uninformed Bee-keeper and the Devious Methods of Some Honey-buyers the Source of Low Prices.

BY OREL L. HERSHISER.

Continued from last issue.

From the foregoing it is apparent that, under normal conditions, honey sold to the wholesale dealer at the jobbing price, and by him to the retail grocery, appears to require an advance of from 40 to 100 per cent before it reaches the consumer. In other words, honey which is sold by the producer at from 14 to 16 cts. costs the consumer from 20 to 30. As profits and opportunities for purchasing and selling are variable it will be understood that the above figures are approximate; but they are sufficiently accurate to serve the purpose of this discussion. To apply the above figures to a specific example easy to understand: If a bee-keeper has a crop of honey worth \$1000, if sold at the jobbing price, the consuming public pays from \$1400 to \$2000 for the same, which is the amount the bee-keeper should receive for such honey crop if he sells to the consumer direct, except a reasonable discount equivalent to the difference in the labor and expense resulting from putting the honey up in containers of considerable size for the family trade instead of the small containers handled by the grocery trade. Need any thing further be said in favor of the producer retailing his own honey? Let every bee-keeper who can do so retail his own crop, as far as possible, classifying his customers as above pointed out; and if he is a good salesman he will be abundantly compensated for the extra work; and, coming in direct contact with the consuming public, he is able to educate it to the use of honey as only the practical bee-keeper can.

The bee-keeper should cultivate and develop his ability as a salesman. He should study what to say and what to leave unsaid. He should acquire the art of versatility. A certain line of argument or discussion will win one customer while entirely different tactics are required with another. Let whatever you say about your goods be the truth. You produced the honey, and know all about it. You were present from the time the bees began work in the spring until the crop was secured. You know how the bees were built up for the harvest; when the supers were put on; when you took them from the hives; with what care you kept the different kinds of honey separate, and how you allowed it to remain in the supers with the bees until thoroughly ripe.

Be persistent but not obtrusive. A jovial

and gentlemanly demeanor is a winner. "Vinegar never catches flies." A naturally sour or dyspeptic person may become interested in honey in spite of herself if the salesman, with seeming carelessness or indifference, will manage to drop a remark that will awaken interest before madam closes the door; such, for example, as "My bees are the Italian race, which are reputed to be the best honey-gatherers;" or, "I make a specialty of bee keeping and honey-production, and my honey is as fine as bees can make it," or some other interest-inspiring comment. Having gotten upon conversational terms with your prospective customer, an ordinary talker can easily keep up the interest on the attractive subject of bees, and a sale is likely to be made and a steady customer secured. Most people are anxious to learn, from one who actually knows, all about honey and the mysteries of the honey-bees.

Spend no time or talent in "knocking" other bee-keepers or retailers. It is true that many of them seem to think a good way to get customers is to hunt up those some other person has educated to the use of honey, and, in order to make a sale, quote a reduced price. It is true you are obliged to do just what they should have done—go and hunt up and educate to the use of honey a customer or customers to take the place of those you have lost to the cut-price retailer. But do not say hard things about him. Pass it up; and when the selling season is over, and your pockets are bulging out with the currency of the realm because of the fair prices you have received, while his have a lean emaciated appearance because of having done an unprofitable business, he will be ashamed of himself; but if he should ask you for a loan it will be yours to reply, "My friend, hereafter *stick to established prices* and your pockets will bulge as do mine;" or, "Go to the ant, thou sluggard."

The bee-keeper who retails his honey should study well the matter of containers to ascertain, as nearly as possible, the size with which he can sell at the greatest profit. Having fixed the price for the family trade, the larger the container the more honey will he sell, for this is not the "hand-to-mouth" sort of customer.

For the retail grocery trade the smaller containers are best. In selling to families, offer the larger-sized package first, and sell the smaller sizes only when the larger sizes will not go. Sell tin pails gross weight, and you thus get paid an equivalent for the pail. If necessary, explain why it is sold gross weight. Glass fruit-jars should be charged for at their value besides the value of the honey. Jelly-glasses are sold by the dozen.

There are great possibilities in cultivating the family trade; and if it were worked in all sections of the country to the limit of consumption I honestly believe that, with prices 50 per cent higher than at present, there would not be sufficient honey produced to meet the demand.

In seasons of plenty, sell all you can at remunerative prices; but do not sacrifice your

honey and thus lose the legitimate reward of an abundant crop.

In the season of 1908 there was an abundant crop, and some bee-keepers got panicky and sold out at prices barely above the cost of production. The season of 1909 was not so good; and if some of that honey had been carried over it would have brought better prices. This applies with greatest force to extracted honey; but comb honey can also be kept over if care is exercised.

Let every bee-keeper be alert to the fullest possibilities of his chosen occupation, and determined to obtain the legitimate compensation for his skill, toil, and trouble. It is his lot to produce his crop of honey only by the sweat of his brow, and against many pointed attacks by superior numbers (the bees); but remember that, in retailing direct to the consumer, there is little danger of being "stung." Spot cash upon delivery of the goods is the rule, and an increasing demand with advancing prices is the fair prospect.

Kenmore, N. Y.

ALEXANDER IMMORTALIZED.

His Methods Defended, and Dr. Miller Criticised for Misapplying His Treatment for European Foul Brood.

BY E. E. PRESSLER.

The article appearing on page 760, Dec. 15, entitled, "Some Discoveries on the Alexander Treatment for European Foul Brood, by Dr. C. C. Miller," and its subsequent comments by the editor, are as discrediting to the teachings and writings of the late lamented Alexander as they are untrue.

While I never wish to pose as a writer, or aim to have my name appear in the bee-journals as a critic, I can not forbear in this case (the author being dead) to enter at least my protest against such juggling of that eminent teacher's writings. The article in question is not only doing gross injustice to his memory, but to every bee-keeper who has ever had European foul brood, and also to his many friends.

I have only the utmost regard for both you and Dr. Miller, and believe that perhaps as many bee-keepers are indebted to you two writers as to the late Alexander. It is not my purpose here to belittle you, if I could, but to defend and support the teachings of one who is no more. Realizing full well that you two "big fellows" are amply qualified to refute any wrongful allegations I might make, I am prepared to crawl into my hole without another word if you should be able to "come back" at me.

If this article in GLEANINGS proves one thing more than another, it is that neither Dr. Miller nor its editor is even familiar with the *literal* knowledge of the Alexander treatment.

Nowhere in all his writings can I find where he speaks of "ten days," "introduc-

ing a laying queen on the twentieth day," nor where he "thought" his cure was efficient for American foul brood. Dr. Miller says, "Mr. Alexander never insisted that his plan would succeed with American foul brood, although I believe he *thought* it might do" (italics are mine). Alexander very emphatically said on this very point, "The old American foul brood is incurable. You can save the bees by the McEvoy treatment, but you can not save the combs." About three years ago, when his plan was attacked, and denounced as not being suitable for American foul brood, you, Mr. Editor, appealed to him to straighten out the muddle, which he did in his almost ante-mortem statement in the following lamentation, taken from page 166, Feb. 1, 1907:

"I do wish I could impress on the minds of all bee-keepers that I never recommended any cure for American foul brood. I wish to have it understood that I don't think that, up to the present time, there has ever been a comb that was affected by American foul brood cured of that disease. You might as soon expect a colony of bees to clean out their combs if filled with paint as to expect them to be able to remove the rotten larvæ. Many bee-keepers are continually speaking and writing of these two diseases as one and the same. Now, if it were not for the young and inexperienced bee-keeper I would not notice this mixing-up of a very important matter. Then when my critics go still further, and speak of the cure I recommended for European foul brood as failing to cure American foul brood, and in that way belittle that cure, when I from the first wrote that I did not think it of any use for American foul brood, they do me injustice. You might as well expect to cure American foul brood by throwing a cup of cold water in the grass in front of your hives as to expect to cure it by requeening as I recommended for European foul brood. The reason why American foul brood has never been cleaned out of a comb is because a larva that dies from that disease is so much like glue that the bees can not remove it in its soft state; and before it dries down it penetrates with its spores into the cocoons of the cell until it becomes a part of the comb itself, where it can not be reached by any disinfectants, nor removed by the bees."

Almost on his dying-bed when he wrote the above, are we now to believe this dying man was trying to deceive us when he lamented in the above language? No, surely not; nor can his words be misinterpreted; they are too plainly understood. There are very many similar expressions throughout his writings, positively showing that he did not think "it might do."

Dr. Miller says the Alexander plan consists of a few words: "Make a colony strong, make it queenless, let it remain so three weeks; then give it a vigorous young laying queen. That's all" (23 words). Can any thing be more falsely represented? Alexander never recommended giving a *laying* queen in less than 27 days. This, the very chief point in

his treatment, is *eggless* for at least 27 days. Dr. Miller overlooks this point entirely as essential. Nowhere in all of Alexander's writings did he ever say that a *laying* queen must be introduced four days prior to the hatching of all the old brood. Now the "sage of Marengo" introduces a *virgin* on the tenth day (one day later than Alexander recommends the destruction of all queen-cells or virgins), which makes it possible for new eggs to be in the hive on the fifteenth day, or nine days before all the old drone brood is hatched. Under normal conditions, colonies made queenless with Dr. Miller's "discoveries" make it possible to have a laying queen in the hive earlier than if they were left to their own fate. I wonder how many of those who read his "modifications" believe the doctor when he says that he discovered that diseased brood piled up over an excluder on top of a strong colony will be cleaned out in "eight or ten days"? In fact, he says "even less time may answer when there is not too much cleaning-up to do."

Now listen: "Mr. Alexander had hardly gone beyond the experimental stage, and it is possible that he never tried any shorter time than three weeks." Those who had the honor of knowing Mr. Alexander, know, and know it well, that he would not recommend anything to others that he had not thoroughly worked out for himself, not in one season, not on one colony, not in "eight or ten days," but in every conceivable scientific, methodical, diligent, painstaking, and conscientious way on hundreds of colonies for a period of many years. This is against Dr. Miller's one season of experience with European foul brood.

I have had more than ten continuous years, not alone with my own bees, but with those of others, for whom I did the curing. I have gone over the field pretty thoroughly, and tried the Alexander method for the past three years. I have had several hundred badly diseased combs cleaned out in five days over excluders, but the combs had hung in the honey-house all the previous winter and were condemned for wax, but I had trouble in securing supplies for myself last spring, so I decided to use them again, having no fear whatever, as I knew they could be cleaned. In Dr. Miller's case he placed combs with live brood on top of excluders (presumably to save the brood), and when he says "In about three weeks from the time the pile was formed (21 days from the time of the removal of the queen), the queen was laying in what generally proved to be clean combs." Oh how easy! Would or could the results have been different if the queen-cells had never been destroyed and a "virgin of choice stock" substituted? If this kind of teaching were true, no European foul brood could ever have existed. Nature makes ample provision for just this very thing without the intervention of Dr. Miller. In from eight to sixteen days after the prime natural swarm, nature always introduces a virgin (sometimes of "choice stock").

Alexander is very positive in his instruc-

tions on this point when he says, page 1125, Nov. 1, 1905, "Supply each one of your diseased queenless colonies with a ripe queen-cell or virgin just hatched . . . on the twentieth day after you have removed their old queen, and *not one hour sooner*, for upon this very point your whole success depends; for your young queen must not commence to lay until three or four days after the last of the old brood is hatched, or 27 days from the time you remove the old queen."

Does this savor of the "experimental stage" from a man who was as honest and thoroughly positive as the firmament?

To my mind it is obvious that in this, his first trip, Dr. Miller did not travel over the Alexander road. How, then, does he know where the mud-holes or bridges are? He made a guess, and says the road is macadamized (easy), and that sewer-pipe was used in construction for the underdrains, and that he has "discovered" a much nicer grade, recommends that less expensive drain-pipes be used, and a crosscut of Wingard's four-mile swamp can be made by supplying stilts for the horses, therefore reducing the distance three miles. I will admit that Dr. Miller is a good guesser in the "bee-line," but on this Alexander road he has another coming.

Mr. Editor, how is Dr. Miller capable of modifying or "discovering" something new in this road, when it is manifestly true that he never traveled it? Is it possible, after paying \$50.00 for this very information in order that the world may profit by it, that you do not know what you bought? After being at his house, and an eye witness to his methods, do you believe Alexander was a fakir and a liar? Your comments are worded in your characteristic adroit and somewhat illusive style; but your headlines and general import are misleading, this being true not only in the articles of Dr. Miller, but with the articles of Alexander. It is mainly through your editorial and comments that this misunderstanding occurs.

After writing the above, in substance, I decided to allow you and Dr. Miller sufficient time to see the error of your way, and you would surely endeavor to retract in the following issue of GLEANINGS; but, alas! no repentance; instead, a continuation of the same standard of teaching. Even if Dr. Miller was correct in his deductions from his very limited experience with European foul brood and the Alexander method of treating it, it is a question if such knowledge is safe in the hands of the average bee-keeper, not considering the amateurs.

In aiming to perpetuate the memory of Alexander, and safeguarding the interests of all bee-keepers, let me suggest that hereafter Dr. Miller's data of any new "discoveries" on any of Alexander's teachings be first submitted to the University of Copenhagen before it be given to the public.

Williamsport, Pa.

[We decided to turn our pugnacious correspondent over to the "tender mercies" of Dr. Miller, feeling that if he (or we) were

really "guilty as charged" he would confess; if not, he would fight it out. We decided to have the "fracas" all in one issue, and asked Dr. Miller to reply, which he does.—ED.]

Mr. Pressler is anxious that no injustice shall be done to one who can no longer defend himself. For this I thank him heartily, whether I am guilty or not of having done any injustice to Mr. Alexander. Moreover, if I have in any way made any wrong impression as to the truth about the treatment of foul brood, the man who calls my attention to the wrong does me a friendly turn; so again I thank Mr. Pressler.

I must confess that it comes to me as a great surprise that in writing what I did I should be found doing gross injustice to the memory of Mr. Alexander, for it was my desire and design to give him the fullest credit for having given to bee-keepers his treatment of European foul brood. Certainly, without his teachings I do not think I should have tried any other treatment than throwing the diseased bees upon found tion.

I think, however, that the injustice Mr. Pressler has in mind is not so much—perhaps not at all—trying to withhold any credit due Mr. Alexander as it is misrepresenting his teachings. I am very sure that nothing of that kind was intentional, and I think it quite possible that Mr. Pressler's understanding of the matter comes from having the two treatments mixed—the Alexander treatment and the treatment I used. And right there may be seen the danger of getting into trouble by taking either one of two courses. If I made no attempt to give credit to Mr. Alexander, then some one might say, "That's the Alexander treatment, distorted, to be sure, and the fellow gives no credit for it, trying to palm it off as his own." If I took the other course, which I did take, giving Mr. Alexander full credit, then there is the danger of the understanding that something I have done may be understood as being according to Mr. Alexander's teaching. Well, I'd rather be thought a liar than to be thought both a liar and a thief, so I'm glad I took the course I did.

I beg, however, friend Pressler, that you will not believe me guilty of either of the bad things I have named; but if I have in any way misrepresented, please set it down to the fact that I am not an adept at properly expressing myself (the use of the English language always has bothered me); for I want very much to retain as much as I can of that regard you say you have for me.

And now let us look at the bill of particulars. The first item is "That neither Dr. Miller nor its editor is even familiar with the *literal* knowledge of the Alexander treatment." I am not solicitous about the editor—meaning, of course, the editor of GLEANINGS—for if he isn't guilty of that he is guilty of other things; but I want to plead for myself that at least I have read with very much interest the article by Mr. Alexander in GLEANINGS for 1905, page 1125, which I believed, and still believe, gives correctly the

Alexander treatment for European foul brood. I am willing to say at least this much for the editor: That, as he appended an unusually long footnote, the probability is that he read the article.

You say, friend Pressler, that nowhere in all Mr. Alexander's writings can you find where he speaks of "ten days." Well, nowhere in all my writings do I know of any place where I said any thing about his speaking of ten days. In the article in question, page 760, I speak of ten days four times, but each time as being part of my treatment varying from the Alexander treatment, and the footnote mentions it in the same way.

You say you can't find where he speaks of "introducing a laying queen on the twentieth day." Well, I can't find where I said he spoke of it. But I came so near it that there's no use quibbling about the difference. I gave as the Alexander treatment, page 760, to let the colony be queenless three weeks and then give it a laying queen. And now I have the very humiliating confession to make, that, until I began writing this paragraph, I didn't know that in giving the resumé of the Alexander treatment quoted by you, I had in the least misrepresented the said treatment, and turned to page 1125, 1905, to quote Mr. Alexander's own words about giving a *laying* queen. (I think I had never before given his own words in quotation marks.) What was my amazement to find that, instead of "laying" the word was "virgin"! I had read it over a number of times (twice at least after reading your article), but each time *thinking* "laying" as I read "virgin," discovering my error only when I went to make a direct quotation with the proper quotation marks. Talking it over in the family, one member asked me, with just a touch of reproach in the question, "How did you come to make such a mistake?"

"I don't know," I replied, "do you ever do any thing of the kind?"

"Um-huh," she replied, with her mouth full of pins.

And there you are. It's a queer trick of the mind that I don't suppose I'm at all alone in. I've done it occasionally all my life, and I'm afraid I'll never outgrow it. I can only say that I am exceedingly sorry for the blunder, and express my thanks to you for calling attention to it.

You say you do not find "where he 'thought' his cure was efficient for American foul brood." Neither do I. Nor did I say he thought so. As you put it, it is a positive statement that I knew he thought his cure was efficient. There is some difference between making a positive statement and saying "I believe." There's a very wide difference between saying "I believe he thought his cure was efficient for foul brood" and saying "I believe he thought it *might* be so." I do not at all think that within the next year three cents will buy a bushel of good wheat, but I think it is within the range of possibilities that it might do so.

But I do not believe that you intentionally misrepresented what I had said, for you im-

mediately quote correctly my exact words, which goes to show that I am not the only one who can read a wrong meaning into words; but you can go a step further than I, making the direct quotation without seeing your error, while I saw my error as soon as I thought of making a direct quotation. Well, we're none of us infallible.

I think I was fully warranted in saying "I believe he thought it might do so." On page 1126, GLEANINGS, 1905, the editor says, "The question may naturally arise now, whether or not this Alexander treatment would not prove equally effective in the case of foul brood. We do not know. Mr. Alexander is somewhat doubtful," etc. If he was in any doubt about it, then he thought it might do so, even if there was only one chance in a million.

Very likely you will say, "But what about that article on page 166, 1907, in which Mr. Alexander says he never recommended any cure for foul brood, and from which an extract is given?" I have no recollection of reading that article or the extract from it until now reading it in your article. When I receive GLEANINGS, it is not carefully read and digested, but hastily crammed to find whether any thing in it may be commented on in Straws, the cramming and the writing to be done inside of 24 hours. Afterward there may or may not be careful reading. Evidently that article on page 166 never had close attention until the reading of your article, and so slid from the memory like grains of sand from a surface of glass, while the article on page 1125 with its footnote was distinctly present when I wrote, "I believe he thought it might do so." I am sorry I didn't know at the time all that Mr. Alexander had written, but I didn't.

As to the matter of the "experimental stage," is the whole subject of European foul brood beyond experiment? Is the Alexander treatment universally accepted? If Mr. Alexander were yet alive, are you sure he would do no further experimenting in this matter?

In giving a resumé of the Alexander treatment, I made the very stupid blunder of putting "laying" for "virgin," and 21 days for 20 days. I think that's all that's wrong in it. I don't know that that one extra day does any great harm; but the other error is exceedingly bad, and I am very, very sorry for it. But in reply to your question, "Can any thing be more falsely represented?" I reply, "Yes; bad as it is, if I were to buckle right down to it I think I could do even worse than that."

On your part, friend Pressler, there are several counts in the indictment against you that must stand unless you can refer to the places where the things are to be found that you quote against me. As two of them are in quotation marks they are supposed to be my exact language, and ought not to be hard to find. If found, my apology is ready.

Don't you think we had both better reform?

C. C. MILLER.

Marengo, Ill.

THE ALEXANDER METHOD OF TREATING EUROPEAN FOUL BROOD.

All Depends on Having the Colonies Strong.

BY IRVING GROWER.

In common with many other bee-keepers in central and eastern New York I have had European or black foul brood in my apiary. I have had the inspector of apiaries for our district prescribe treatment which consisted in shaking on foundation in clean hives, melting up the combs, and disinfecting every thing thoroughly. This I did in 1902. The season was poor, and the shaking was more or less a failure, so that the trouble showed up quite prominently again the following spring. I continued the shaking process with varying results for several seasons. One thing which the inspector impressed on my mind was the importance of good Italian stock, and that I should keep all colonies strong. At that time he made the statement that some strains of Italians seem to be immune to the disease. I had been a honey-producer fifteen years before I ever saw the disease, and half or more of my colonies were Italians, the others being all grades of hybrids. Each season I Italianized more of the colonies.

When the Alexander method of treatment was published I pronounced it too good to be true, but at the same time made preparations for trying it, and the following season purchased a breeding queen from one of the noted breeders. Mr. Alexander advised making all the colonies strong, either by giving brood from healthy colonies or by some other plan. Now, any one who has had any experience with disease will hesitate before placing frames of brood from healthy colonies in those that are diseased, so I decided to strengthen these diseased colonies by shaking young bees from five or six frames into each hive which I intended to treat. I then made these colonies queenless, and left them so 21 days. Being busy with other work I did not make an examination until almost time to give the queens that I had reared, and I found that the colonies were not as strong as I thought they were, so I shook in some more bees and introduced the queens. When brood-rearing began to show in the hives the disease was still there except in one or two cases, so of course I voted the treatment a failure.

It was by an accident that I found that, if we wanted to be successful with the Alexander treatment, we simply had to make the colonies strong. The season following my failure I prepared to shake all colonies that showed the disease on to foundation when the honey-flow was nearly at its best. When the time arrived I found that I had eight colonies to treat; and as none of them were strong I decided to select six of them and shake the bees into two clean hives, as there was quite a lot of good brood in the frames, so that there would be enough young bees

to take care of the rest of the brood if it were tiered up.

I intended to shake again on to foundation, giving a queen at the opening of the buckwheat season. This I did, but there were too many combs from the six hives to put over one hive; and as it was nearly dark, and as there were the two other hives which I had not shaken, the queens of which were old and not laying, I decided to give a part of the combs to these two hives, and, after the buckwheat flow was over, to kill the bees, extract the honey, melt up the combs, etc. I used the hive illustrated in "Quinby's New Bee-keeping," called the new Quinby hive. It has 16 closed-end frames. In each of these two hives I filled the lower part and then put 16 more frames on top, making 32 in all. I did not open these colonies until the season was over, and all the colonies were nearly out of brood; and then I found plenty of honey in the hives, and in each were fine young queens. After some consideration I decided not to destroy the colonies, but to pack them for winter. They wintered well, and were the first to swarm the following season, and they did not show a sign of disease, nor have they done so since.

Unconsciously in the above I had done what Mr. Alexander had advised; that is, had made the colonies strong. The natural instinct of the bees to supersede a failing queen caused them to take advantage of the condition, and do it at the time, making the cure complete.

Cooperstown, N. Y.

EUROPEAN FOUL BROOD.

Golden Italians More Immune to it Than the Leather-colored Strains.

BY EDGAR WILLIAMS.

I have read with interest Dr. Miller's account of his experience with foul brood. He said the disease was very mild, most of the cases showing only a few diseased cells. If the colonies had been badly affected I do not believe he would have been as successful.

A few years ago I had thirty colonies, all badly diseased; in most of them over half the brood was affected, and in some of them there was very little healthy brood. I gave all the colonies the McEvoy treatment, and a few days afterward noticed a quantity of matter as large as a bean in front of one of the entrances. Whether this was diseased I can not say; but anyway a good many of the colonies showed signs of trouble shortly after the treatment was given, and by fall all were slightly affected, a few of them being simply rotten with it. The following spring all were badly diseased again. I sent a sample of the brood to Washington, and it was pronounced European foul brood. I tried nearly all the remedies then known—drugs, etc., but nothing gave any help.

I had heard of the Italians being able to

resist disease, so I sent for a dozen queens. The following spring the colonies to which I had introduced these queens were healthy, although there were diseased colonies all around them. Since then, with the pure Italians I have had scarcely any trouble. Some of the leather-colored strains showed the disease quite badly. The goldens are the ones that resist the trouble best, very few of them showing any bad symptoms; and when they do there are never many cells affected, and these are always cleaned up when the honey-flow opens.

In the spring, during the breeding months I look over each colony every week or ten days; and if a few cells of disease are found, that colony is marked; and at the next week's examination, if the trouble is still growing I kill the queen at once. Then in about ten days I give a cell from my select golden stock and the job is done. If the queen is purely mated, such colony is cured; but if she is mated with a black or hybrid drone I generally have my work to do over another year. I have had extra good hybrids, nearly all yellow, that showed the disease as badly as the blacks. It is necessary for the colonies to be pure. As my bees are now nearly all immune to the disease I handle them just as if there were none among them. I once took some combs, nearly half of the brood in which was affected, and gave them to a colony of goldens. In two or three weeks' time these combs were healthy. One fall I had four or five colonies that were so weak with the disease that I knew they would not winter. I sulphured them, and the next spring hived golden swarms on the combs, and the bees remained perfectly healthy.

TWO QUESTIONS.

If cappings are rendered in the solar wax-extractor, is the flavor of the honey injured so much that it would be unsalable? The temperature of my bee-cellar this winter has not been above 40 much of the time, and it has been down to freezing once or twice, the general average being about 38 degrees. The bees seem to be wintering well. I have had a fire in the cellar occasionally. Would it do any harm to start the fire with kerosene if I used wood afterward? There is some smell from the burning oil at first.

Pierpont, Ohio.

[Most authorities would consider it very risky to exchange combs promiscuously in a yard where European foul brood existed; but more than one bee-keeper has reported doing this very thing with no apparent bad results, provided the apiary is stocked with golden Italians. Who else can add testimony on this question?

The honey from a solar wax-extractor, unless great care is used, is quite likely to be injured. Most producers drain as much of the honey out of the cappings as possible before putting them into the solar extractor, and in this way the loss is not very great.

We do not believe that there would be any danger of losing bees if kerosene is

used simply to start the fire. However, we think that as little of it should be used as possible. After some practice you can start the fire quickly with a very small amount of oil.—Ed.]

ANOTHER WHO HAS USED THE ALEXANDER PLAN OF CURING EUROPEAN FOUL BROOD.

BY F. W. LUEBECK.

I do not know what previous experience Dr. Miller has had with European foul brood; but all through his article there is evidence that he must be a new hand with the trouble. If he thinks his bees are now cured he will be sadly disappointed, and next season in May or June he will have another story to tell. During the summer a newly infected colony, or a colony just starting a new brood-nest, will remove all diseased larvæ, and irregular brood or brood of different ages close together is the only evidence of the disease. However, as soon as the bees come again to a state of low vitality, as in the spring, they will not remove the dead larvæ, consequently the disease will make headway very fast. Italians having a vigorous queen will succeed to a certain extent, while the blacks or hybrids will make no effort to clean out the foul matter.

Combs above an excluder, taken from foul broody colonies and given immediately to healthy colonies, will start the disease in a short time; that is, if unsealed brood is present in the healthy colony at the time that such combs of honey are given; but, on the other hand, if the combs are away from the bees for some time there would be no direct infection, as the germs can thrive only in dead animal matter. But it is just possible that some of the cells of honey contain the spores of the germs; then, as soon as such cells are opened and the honey fed to the larvæ, infection is the result.

I tried the Alexander plan on about 50 Italian colonies when they were fairly strong, and when there was not too much dead brood, and perfectly healthy brood has been the result.

Now, it is not my intention to discredit the McEvoy treatment for European foul brood; for when the disease breaks out for the first time, and most of the combs are a mass of dead matter, there is, perhaps, no other way than to remove them; but as soon as possible thereafter, all queens of such colonies should be superseded by those of a more immune and vigorous strain of pure Italians. Hybrids and blacks should not be tolerated under any circumstances in a locality where this disease is present. Nature's object in the disease is to improve the races of bees by destroying and weeding out the weak ones; so if we breed our queens only from the most immune strain, we shall aid nature direct, and the trouble will disappear as our bees improve in vigor and vitality.

It is now four years since my apiaries were struck by this disease. I have 81 colonies at

present, which were all nice and clean last fall, but I believe the disease will appear again next spring. However, I am not worrying much about it, as I have learned to control the trouble without destroying the combs, so that I shall not be obliged to interfere with the gathering of a honey crop.

Knox, Ind.

PREVENTING ABSCONDING WHEN TREATING FOUL BROOD.

Do the Bees Ever Mix Honey and Foul Brood in the Hive?

BY E. M. GIBSON.

As Dr. Miller has broken the ice I may say a few things in corroboration of what he says on page 728, Dec. 1. From what he has written or from what I may write, if any one gets an idea that foul brood is not a bad disease to combat I can assure him that he will change his mind if he is so unfortunate as to get it among his bees. The doctor says he got desperate because so many colonies were absconding. This could have been avoided by putting a queen-excluder on the bottom-board of the hive in the same manner one would place it between the super and brood-nest, leaving it on three or four days, when the bees would have cells drawn, and honey and eggs in many of them. The excluder could then have been removed without any danger of bees leaving. This, of course, can be done only with interchangeable hives, or, at least, not with hives with the floor nailed on. I did not disinfect or burn out my hives, and did not use lye in the water that I scalded my frames in. Mine was American foul brood.

As to infection being carried into the super, I would say I put eight colonies on to foundation, putting all the combs from the brood-nest into the supers and putting them on top with a queen excluder between them. All the combs put above were more or less infected. I left them until I could not find a cell not filled with honey. I marked hundreds of those infected cells, but never found one with honey until it was thoroughly cleaned out. When the scale was too hard to be removed they invariably tore the cells out and built new ones. I use those combs now.

I have never been able to find honey and scale in the same cell. Has any one? I am curious to know from what source the honey was obtained in which chemists have found foul-brood spores, whether extracted or taken from a well-filled comb. Extracted honey thrown from a diseased comb could not fail to be infected; but with two years' diligent search I have failed to find it mixed in the comb; yet the microscope might show particles too infinitesimal to be seen with the naked eye; but with my present knowledge and experience I would not hesitate to feed back honey taken from the super above a queen-excluder of a diseased colony. Those eight colonies all had to be treated again as I expected.

Jamul, Cal.

BEE-KEEPING AS SEEN ON A TRIP THROUGH EUROPE.

BY JAS. B. PAIGE.

It was my good fortune during the past summer to travel 3500 or 3600 miles by auto on the Continent and in Great Britain. I was in England, France, Italy, Germany, Switzerland, and Holland. I had with me a small pocket camera, so took advantage of every opportunity to get pictures of interest to bee-keepers. At the suggestion of Dr. Burton N. Gates I am sending a few prints, thinking they may be of use in GLEANINGS.

Fig. 1 shows bees in the Bernese Alps, Switzerland, on the road from Interlaken to Grindelwald. The elevation is 3000 to 4000 feet. There are two rows of "skeps" covered with burlap, in the house which is open, and shingled with pieces of flat stone. In the background are bare mountain-peaks over which the fog "warps" in graceful curves and fantastic shapes, to disappear again in invisible mist. From the field in which the house is located one obtains a most beautiful view of the eternally snow-capped peaks of the Jungfrau (13,670 feet), the Monch (13,468), the Eiger (13,040), besides many

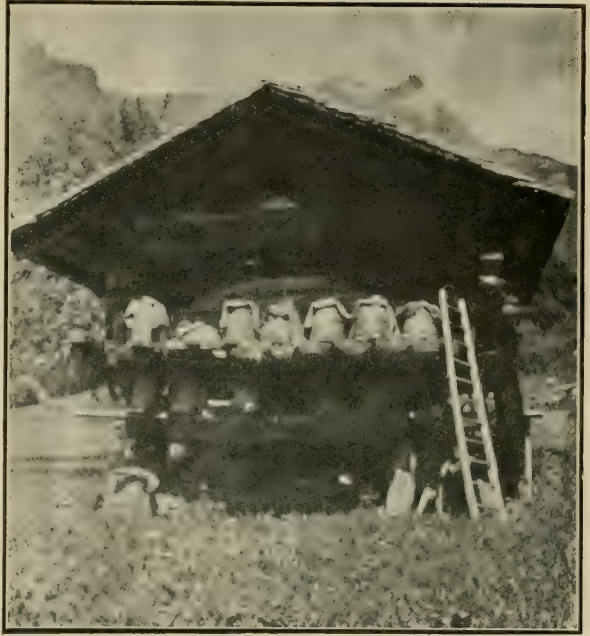


FIG. 1.—BEES IN THE BERNESE ALPS, SWITZERLAND.†

peaks of equal height, including the Wetterhorn, Schreckhorn, Finsteraarhorn, and Silberhorn, and, in the beautiful valley below, the turbulent, rushing black Lutschine laden with debris from the upper and lower Grindelwald glaciers in transit to Lake Brienz.

Fig. 2 is a Swiss "chalet" in the Lütchen Thal, near Grindelwald, Bernese Oberland, Switzerland. Six "skeps" covered with burlap sacks are outside the windows of the living-room, protected from rain by the overhanging roof. Note the wood nicely piled beneath the hives. The upper floor is reached by a pair of outside stairs with a landing on the balcony, seen between the windows above, and those near which the "skeps" are standing. The garden at the end of the chalet was filled to overflowing with flowers and vegetables.

In the vicinity of this Swiss home the fields and mountainsides were richly covered with vegetation in which honey-producing flora was abundant. White clover grows here in great profusion, and occasionally one finds sweet clover.

Queer hives in a farmer's garden at Payerne, Switzerland, are shown in Fig. 3. All along the route from Lausanne to Bern, through the rich Boyer Valley,



FIG. 2.—SIX "SKEPS" COVERED WITH BURLAP OUTSIDE;
A SWISS "CHALET."



FIG. 3.—BEES IN A FARMER'S GARDEN AT PAYERNE, SWITZERLAND.

many hives of bees are seen about the homes of the farmers. Most commonly the "skep" is seen, but occasionally one notices a modern movable-frame hive. The style of hive shown in the picture is rare. It was, indeed, a wonder. Consisting of a long case, the back part of the roof hinged to open, it contained three sets of movable frames, and had sufficient space above for three sets of one-pound sections. The sets of frames and sections were placed end to end without partitions between them. After a spirited speechless sign conversation carried on with the farmer and his "frau," I was permitted to view the interior of the hive in the foreground and to take a picture of the yard. The bees were of the black variety, and decidedly energetic, so that my investigation was neither thorough nor protracted, and I am unable to state whether there were multiple queens present or not.

Fig 4 is an apiary near Arnhem, in Holland. The shed is covered with tile. The "skeps" have openings above the middle. Usually the skep super is made of straw, being a miniature hive, but in some instances supers of wood are used, and it is not unusual to find skeps standing in the gardens cover-

ed with large red earthen bowls to protect them from the rain and heat.

Black bees, a warm day, and a hot time in getting the pictures are my recollections of this apiary.

Amherst, Mass.

HIVE-STANDS.

How the Ideal Foundation for a Hive Should be Built; the Value of Concrete Slabs under the Regular Stands.

BY F. GREINER.

Judging by the many fine illustrations of bee-yards in the different bee journals, for example on pages 772, 773, Dec. 15, the hive-stands often employed have some grave faults. Even our good Dr. Miller, according to his own words, makes use of a very poor affair. A hive-stand alone may be considered an insignificant factor in honey production; but it is my opinion that a good one may at times increase the yield from the apiary materially. It may save valuable time to the bees; it may prevent loss of bees and sometimes even of queens. A good hive-stand should, according to my views, embody certain principles of which some seem to have

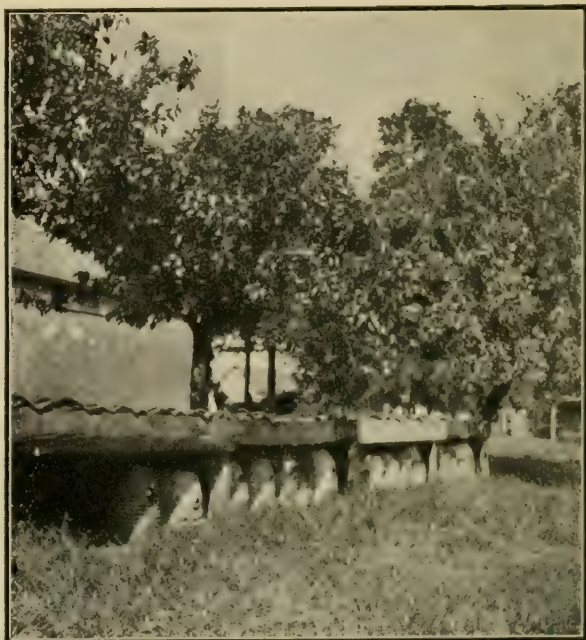


FIG. 4.—AN APIARY OF STRAW SKEPS NEAR ARNHEM, HOLLAND.



HIVE-STANDS PROPERLY CONSTRUCTED, AS USED BY F. GREINER, NAPLES, N. Y.

been lost sight of. Foremost, it should assist the bees in gaining their hive-entrance safely. When A. I. Root introduced his Simplicity hive forty years ago he advised the use of four bricks for the hive to stand on, with a heap of sawdust piled up in front of it. Many of us tried this. The sawdust kept down the grass and formed a passageway from the ground up to the hive; and although it seemed to be agreeable to the bees, it had some unpleasant features, like blowing into the hive when dry, rotting the hive when wet, and then the grass crept over it and filled it full of roots, etc. An unplanned board is almost as acceptable to the bees, and is much more reliable. I believe the use of sawdust has entirely gone out of fashion, and the pine board has generally been adopted for an alighting-board. I theorize that it is better than cement on account of being a better non-conductor of heat, but, of course, it is not as lasting.

The hive-stand should be close fitting to the hive all around. It should not furnish an opportunity for bees to cluster under the hive nor afford a hiding-place for toads during daytime. These ugly fellows are very objectionable visitors in the apiary, and eat a great many bees when they can get them. As the toad is very useful in other ways I never kill one; but when I find one around my hives I carry it away a long distance; but by not allowing harboring-places for them under and among the hives, very few of these animals stay around.

The easiest way to make every thing snug

is to make a shallow box of the same size as the hive bottom, making the front end slanting and tight-fitting against the hive. There should be no holes left anywhere for bees to enter the space under the hive. I have known bees to set up housekeeping under the hive, totally ignoring all the new-fangled fixtures which we had put inside, just because the hive proper was not well guarded.

A hive-stand should preserve the least amount of actual contact between the hive-bottom and the stand. At one time we were using a hive-stand which consisted of a platform made of common lumber, somewhat larger than the hive-bottom, and nailed upon two pieces of scantling. As Dr. Miller says, this is the poorest thing one can use. Between the two thicknesses of lumber moisture collects, and soon both hive and stand rot out. Ants establish themselves here, and perforate the timber. Other disadvantages I need not mention. The shallow box outlined above presents only the edges of the boards upon which the hive-bottom rests; and there being no chance for moisture to collect it will last about as long as any other part of the hive.

The only weak point of the hive-stand described is its readiness to rot away. As I make them they are five inches deep; but after ten years' use almost nothing is left, and a new one has to be substituted. The cost, however, is slight, as but a small amount of inferior lumber is required to make one. Dealers offer this hive-stand at 12 cen's each, which is as cheap as I can get them out myself.



F. GREINER'S APIARY, NAPLES, N. Y., IN MID-WINTER.

I make them of rough lumber. They last as well unpainted as painted.

It would be an improvement, and enhance the lasting qualities of the hive-stand, as well as make things very neat and tidy, if a cement slab were put down first and the stand placed on it. I am planning to lay out my home yard carefully, making exact measurements: dig the sod off for a space 2½ to 3 inches larger all around than the stand will occupy, filling the space with cement even with the lawn. It is a very pleasing sight to have nicely painted white hives stand out on a well-kept green lawn. I want the lawn at all hazards, but have found that it requires a good deal of handwork to keep the grass down next to the hive where the lawn-mower does not cut. Somehow, and for good reasons, the stools of grass make their heaviest growth right here where only the pocket-knife or shears can be applied. This very annoying feature I expect to eliminate by the cement margin around the hive. A few bee-keepers are situated so as to keep a few sheep in their enclosed bee-yard; and, indeed, the sheep keep down all vegetable growth nicely; but even this best of all methods is open to some objections.

The photo which accompanies this shows my hive-stand as it has been used on different styles of hives in my yards for more than 25 years. The alighting-board as shown is painted white in order to make a better contrast with the surrounding green grass. In reality I do not paint them. If I were to use paint on the smooth surface of the board I would sprinkle sand on the paint while still green. Even a weakened bee would then never "slip" nor lose its foothold.

Naples, N. Y.

[There is one point in favor of a hive-stand with slanting board front which our correspondent has not touched, or at least only incidentally. In early spring, especially after long confinement, bees will often venture out when the sun shines brightly, notwithstanding it is a little too cool for them to remain out long. They will make a few circles, void their fæces, and return to their hives, or attempt to do so, in a more or less chilled condition. Many of them will alight on the ground; and if the approach to the hive is difficult or slippery, some will be lost and never get into the hive; whereas an easier approach, like that shown in the illustration, will induce the bees to go into the hive.

While we do not necessarily lose bees that are chilled outside, yet unless a warming day comes up in the next four or five days or a week, these bees will die. If a temperature of 70 degrees with warm sunshine comes on within the period named, most if not all the chilled bees will "come to" and enter the hive. Even then an easy approach is quite important.

Some years ago our Mr. F. J. Wardell, then in charge of our home yard, called attention to the fact that those colonies not supplied with slanting-front entrances showed a greater spring dwindling than those that were

so supplied. The reason was quite obvious when we began to look at the number of dead in front of the hives having vertical-front entrances.

This is a matter of considerable importance, and our readers should take note of the comparative mortality in front of their hives.—ED.]

THE GROWING OF BUCKWHEAT FOR GRAIN AND HONEY.

How to Prepare the Soil; the Old-fashioned Black Buckwheat Better for Honey.

BY J. H. M'GOWAN.

I send a snap shot of a buckwheat-field in full bloom. The growing of this crop here is considered by some an uncertainty, while others call it a "sorry crop;" that is, they are sorry when it is good that they did not sow more, and sorry, when it is bad they sowed so much. But in this article I will try to tell how one may be almost sure of getting plenty of bloom (what the bee-keeper likes to see) and plenty of straw and grain.

KIND OF SOIL.

To grow this crop to its best, several things must be taken into consideration. First, the soil. Any kind of well-drained land will answer. Buckwheat will not grow on ground that is wet and heavy or where the water stands and gradually dries up, leaving the soil in a hard, lifeless condition. It does best where the land is naturally dry, or made so by proper draining.

PLOWING AND PREPARING THE LAND.

Here in Butler Co. we begin to plow just as soon as corn is planted—about May 25. Each day's plowing is rolled or dragged down in the evening. This is important, as one should keep in the soil all the moisture that is already there. We follow this plan until plowing is all done.

HARROWING AND SEEDING.

Now, then, the work is only partly done, as it is necessary to keep after this field with a good spring-tooth harrow or disk and roller alternately until seeding time, when the seed-bed should be perfectly clean, fine, and solid. It is now ready to drill in (never broadcast), provided the proper time is at hand. Here we drill from July 1 to 20. Early sowing insures a large yield of straw and bloom, while late sowing usually fills the best, as the sun is then not nearly so hot during the time of bloom. I have seen fields sown early turn brown in two days on account of the hot sun.

HOW MUCH SEED TO SOW PER ACRE.

One and a half bushels Japanese, and one bushel of silverhull or little black is about right. In the Japanese variety the grain is larger and the stalk does not branch out so much as the other two varieties mentioned. This is the reason why more Japanese should be sown per acre; but if honey is a consider-



M'GOWAN'S BUCKWHEAT IN FULL BLOOM IN BUTLER CO., PA.

Mr. McGowan, by a close study of the details, prevents failures and makes the crop a very reliable one.

ation I would advise sowing the little black or silverhull, as it blooms until cut or killed by frost.

THE USE OF FERTILIZER.

There is another important factor in the raising of this crop; and that is the use of fertilizer. We never think of growing it without using from 100 to 150 lbs. per acre of acid fertilizer, costing from \$10 00 to \$12.00 per ton. It just seems to make it boom—makes both grain and straw, and a much larger yield. Last year I sowed three fields to buckwheat. The first one was drilled in July 6; the straw was medium, and yielded 16 bushels per acre. The second was drilled in July 11; straw heavier than that in the first field, and yielded 22 bushels per acre. The third was drilled in July 19, straw like the first field, but yielded 25 bushels per acre. As a rule, early sowing gives large straw and a poor yield in bushels, while late sowing is the opposite.

Here buckwheat is grown for the following reasons: It comes quick; is easily harvested; is a splendid bee pasture; in fact, it is all we have to depend on. The straw is valuable on the farm. The flour has a ready sale at good prices on account of its national reputation. Nothing is quite so good as buckwheat for poultry; and when ground in connection with corn and oats it makes the best kind of feed for milch cows.

I would urge every bee-keeper, if at all possible, to put in at least a few acres for the

bees, and to furnish some of those good warm cakes which we all like for breakfast. Prospect, Pa.

[We consider this article one of the best and most comprehensive we have ever received. Buckwheat is nearly always a paying crop, particularly as it enables the intelligent farmer to secure a double investment out of his land: As buckwheat pancakes are becoming more and more popular, good prices are usually obtained for the grain. It will, therefore, behoove the bee-keeper farmer, if he has not had much experience in growing this crop to give this article more than a mere passing attention.

What our correspondent says about black buckwheat being better for *honey* seems to confirm our experience. Has any one else noticed the same thing? The question of the kind of seed a bee keeper should sow is an important one to consider, and we hope our friends in York State, where so much buckwheat is grown, will not be slow to respond.—ED.]

THE LONGEVITY OF QUEENS RAISED BY BREEDERS.

BY F. DUNDAS TODD.

In the literature of bee-keeping much space is devoted to the problems that surround the purchase of queens from breeders and their introduction to hives in the apiary. The

transportation of the bees is generally viewed as practically solved; and once the queen has been accepted and eggs have been laid, the whole transaction is usually considered as being complete. Only once have I seen a questioning note—the writer hinting that one shouldn't halloo until a few months have elapsed, for supersedure was not infrequent. Since little in the way of definite facts has appeared on this subject it may be interesting to put my own experiences on record, even if my bee-keeping career is a short one.

In my first season (I lived then in Illinois) I bought two queens from a breeder in Kentucky. They arrived safely, and were introduced without difficulty. They were alive in mid-summer, the next year, when I disposed of my hives. In July, 1908, after the honey-flow was over in this part of the world, with but little pickings in the fall, I received from a breeder in Ohio five queens, all of which were safely introduced, and were alive at the end of August, when the last examination of hives was made. One of them was killed by starvation in January; the others died of spring dwindling.

On August 24 I received a dozen queens from the Kentucky breeder, and introduced all of them, apparently with success. The hives were not opened again after the cages were removed until the end of January, when indications of starvation forced investigation. I found four dead with plenty of bees; three died of spring dwindling, and five were alive at the end of the honey-dew flow—honey-flow did not happen—of 1909. Apparently there had been no attempts at supersedure.

Early in April, 1909, I bought a lot of hives in moderate condition; and, being anxious for increase, I ordered from a breeder in Texas a dozen queens. There, as here, had been a pollen-dearth, so my order did not arrive until May 12, and it happened to be one short. One queen was in poor condition on arrival. The day was cold and rainy; and so, choosing the lesser of two evils, I gave the cage to a queenless hive, but the queen was found dead after a few days.

Nuclei were formed for all the others, consisting of three or four Gallup frames of sealed brood and adhering bees. All were accepted and started to lay. One hive showed eggs in 6 days; one in 7 days; two in 9 days; one in 11 days; two in 12 days; two in 13 days; one something over ten days.

A week after introduction we had a killing frost on three successive nights, that play-havoc with the fruit-blossoms. Nectar and

pollen had been coming in freely; in fact, one hive with a fine reputation had hardly an empty cell, all being full of brood or stores, notwithstanding I had robbed it of a frame of stores at three different times to aid weaker colonies. On the 22d I started to feed all hives having young queens; later I did the same wherever needed. I feel it necessary to mention these facts in view of later developments.

When once the queen started laying, the frames were filled solid with brood: the queen that started on the sixth day was prompt about her business. The moment the cells were vacant she filled them again; combs were built; and, long before any of the others were making a good showing, she had one division full; and then, just as promptly, filled another. In just six weeks her bees had built 16 combs and had them filled with brood and honey-dew. Two months later the colony was strong with about 18 lbs. of stores on hand. I consider her record excellent.

The one that started in seven days, on June 17 was doing finely, so I added above it the frames from another hive where the queen had died. July 2 I found queen-cells in the hive but no queen, so supersedure occurred in about 42 days from the laying of the first egg.

Coming now to the queens that began to lay in the ninth day after introduction, one developed a good colony with lots of stores; but the other showed queen-cells in 25 days from the laying of the first egg.

The queen that started laying on the eleventh day was alive at the end of the season.

The two that began to lay on the twelfth day did fairly well.

One of the queens that started on the thirteenth day died suddenly after filling the frames, as, twenty days later, she was missing, and no queen-cells were in evidence. The other is credited as being in fair condition 34 days after the first egg; but 15 days later the hive was found without brood and with an open queen-cell.

The record of the tenth queen is not perfect. She was seen ten days after introduction, but no eggs were in the frames. Thirty days later she was missing, and cells started.

The twelfth queen or the dozen arrived June 20, and was given to three frames of

brood. She was alive at the end of August.

Of the old queens in my purchase, seven were superseded by the bees; but only one of these was superseded in turn. Four



"A GOOD FIND." BROKEN BRICKS FOR HIVE-STANDS.
See Bee-keeping in the Southwest, last issue.

were superseded in May, from the 3d to the 25th; three in June, from the 2d to the 18th.

Summing up I find that, out of a dozen queens received this summer, one, in evidently poor condition, died in a few days, and five were superseded by the bees in an average of 34 days from the date of arrival. Sometimes I am tempted to lay the blame for the result on the stoppage of nectar for about ten days and the entire absence of a honey-flow, for such conditions must have been exceedingly disheartening to the bees; but, on the other hand, there is an evident relationship between the time of starting to lay and superseding; for the three that started last of all were included in the list of missing. The one that began on the seventh day was also superseded; but her case is complicated by the addition of queenless bees from another hive, so that the evidence here is not direct.

Seemingly the most vigorous queens recovered the quickest from the seven days' journey; the others may have been injured in the mails.

In keeping scientific records, nothing is considered too trivial for notice; and I am blaming myself for omitting to jot down one point. The eleven queens arrived in two different sizes of cages—the only one that looked poorly being in one of the ordinary small size, and she was the top one at that. I now wish that I had entered on my notebook, opposite each queen, the size of cage she had been received in, for it is possible such a direct comparison might be of value to queen-breeders when filling orders to a customer a week's journey away.

Victoria, B. C., Oct. 1, 1909.

THE CONTROL OF BEE-PASTURAGE.

Has the Bee-keeper a So-called Moral Right to his Territory? Bee-keeping in the Same Class with Many Other Occupations.

BY R. L. TAYLOR.

It seems from articles appearing in the apian journals from time to time that there is a growing uneasiness in certain quarters as to the stability of the business of apiculture on account of the fact, as it is asserted, that the bee-keeper has no legal protection in the exclusive enjoyment of his territory, being in that respect at a disadvantage as compared with those engaged in other kinds of business. So we find the assertion that "if ever bee-keeping is to stand on a firm basis like other lines of business, there must be such a condition of affairs that the bee-keeper shall feel just as secure against interference as the stock-raiser who is assured by the law that his fields shall be occupied by his cattle and by his alone." And this: "No bee-keeper in this land has a legal right to his territory."

It would indeed be a deplorable situation if the law discriminates between the rights

to bee-pasture and the rights to cow-pasture. It would be not only alarming but actually disgraceful if, in the eye of the law, bee-keeping did not "stand upon a firm basis like other lines of business." And it would be alike unfortunate, if it were a fact, that "no bee-keeper in this land has a legal right to his territory"—that is, if he has desired such legal right and has been willing to make the necessary sacrifice to secure that right—a sacrifice similar to that which the dairyman must make in order to secure a legal right to his "cow-pasture."

That we may see more clearly whether the law discriminates unjustly against bee-keeping as compared with other kinds of business, let me make use of a few illustrations; and if I should introduce, here and there, some brief arguments on side issues, I trust they may not be found altogether impertinent.

As much dependence has heretofore been placed, in this discussion, on the security the law spreads over the cow-pasture, in order to determine how much reliance can safely be placed upon it, I will take a supposed case in which that pasture largely figures: I collect a small herd of cows and other cattle, and transfer them to a pleasant valley, say in Montana, containing 50 or more square miles of fertile prairie, which, as yet, is all government land. For a few years all is prosperity; my herds increase and begin to try the capacity of the valley. About that time the outside world learns of the beauty and fertility of the land, and begins to crowd in and preempt the territory, starting herds of their own, and press my herds back into inadequate and unprofitable limits. Ought I now to become frantic and proclaim to the world the instability of the basis upon which cow-pasture stands, seeking to arouse the sympathy of the country to the end that the legislature may be invoked to spread the ægis of the law over my cow-pasture? But, unfortunately, I am not a "stock-raiser who is assured by the law that his fields shall be occupied by his cattle and by his alone." Why? Clearly because I have not been willing to make the sacrifice necessary to put myself under the protection of the law.

It may be said that this is not a parallel case because I have no moral right, while the prior bee-keeper has a moral right. I freely admit I have no moral right; and as to the average bee-keeper, I am unable to perceive wherein his moral right is any more in evidence than is mine. I make bold to say he has no moral right. If my neighbor on the adjoining farm should decide to embark in apiculture, and should start in the business with one hundred colonies I could freely bid him God-speed. For thirty years I have been trying "to learn how many colonies my locality will bear, and I don't know yet." Why, then, should I play dog in the manger? There may be abundance of room for both; and besides, his right, morally and legally, is as good as mine. The most I could do would be to warn him that there might be danger in placing so many colonies in prac-

tically one location that the business might become unprofitable to us both.

But it may be said again that this is not a parallel case because I should have purchased the land I needed for pasture as other stockmen do. This inequality is probably not so great as it appears on first blush; but let us take another illustration:

There are in my little town at least seven shops devoted to the sale of groceries alone, comparatively few of them doing a really satisfactory business; in other words the territory is overstocked. Some of these grocers were on the ground doing business before the others appeared on the scene; but I do not, however, hear any talk of "priority rights" nor of "moral rights," nor of invoking the law to give them exclusive right to territory. Why do I not hear these things? The need is pressing—much more pressing than in the case of the business of bee-keeping.

There is one way in which one or two or more could have secured the exclusive right to sell groceries in this territory, and that is by obligating every owner of land in the district, by making a satisfactory payment, not to allow the sale of groceries on his land, and to bind all subsequent purchasers of the land to the observance of that obligation by the insertion of the requisite stipulation in the deeds of sale.

If you want to secure the exclusive right to the bee-pasture of a township, for instance, take the course indicated as the proper and effective one in the case of the grocer. There is no other way. Subject to the government's right of "eminent domain," he who has a fee simple in land owns it clear through, from heaven above to hell beneath, and you can not dispossess him of the right to keep bees there, without his consent, short of a constitutional revolution.

But in the case of bee-keeping, unlike the case of the grocer, there is, fortunately, no such pressing need of a resort to some new and unheard-of method to relieve the congestion. With the grocer, practically all choice locations are occupied; but with the bee-keepers, the frontiers of the bee-pasture are only touched as yet. There is, therefore, no present cause for alarm. There is no occasion for crowding, and there will be no crowding that is more than temporary, for the good reason that no one prefers the unprofitable to the profitable. Let us thank the blessed sting and the wide pasture, and be content.

To recur to the cows, we may safely say, then, that there is no good reason why "a man who makes his living from bees, or part of his living, should not feel just as secure in his field as the man who makes his livings from cows" except this: The man who keeps cows is generally compelled (or at least is generally willing) to purchase a right to his pasture, while the man who keeps bees thinks he has or ought to have a right to his pasture without giving an equivalent.

It is not so long since that stockmen undertook to pursue their industry out west on

the plains without securing a legal right to their pasture. They did not always get along as swimmingly as bee-keepers do; but I do not recall that any of them were so lost to reason that they invoked the higher powers to grant them an exclusive right to their territory without expecting to render an equivalent.

Yes, suppose Jones has found a favorable locality and starts an apiary there; and I, thinking the locality not sufficiently stocked, "plant 50 colonies right beside him. Pretty rough on Jones." But that is not a situation peculiar to apiculture, as we have already seen.

Notwithstanding the uneasiness manifested regarding the status of bee-keeping it would be somewhat difficult to make much of a list of those pursuing other occupations who stand in less need of an exclusive right to their territory, either for the production or the sale of their merchandise, than does the bee-keeper; and though there may be some who will be inclined to question the validity of my suggestion that the desirability of an exclusive right to territory for the sale of a product is as important as is the exclusive right to territory for its production, I shall for the present take my position for granted, and make use of one more illustration that may aid in the understanding of the whole matter.

Many years ago I planted several acres of table grapes—the choicest kinds that can be made to succeed here—sufficient to produce all the grapes that my town can be made to absorb profitably. Several others in my neighborhood, seeing my success, and thinking there was good easy money in the business, embarked in it; and, there not being an outlet for the fruit, they overstocked my territory. Then it became a question of the survival of the fittest. Some one had to quit. It was not I.

Not to enlarge upon the theme, must we not conclude that in general, as things now go, the law of the survival of the fittest must govern, and that bee-keeping stands on as firm a basis as other lines of business, even having the advantage in point of stability, and that every bee-keeper in this land may have a legal right to his territory if he is willing to pay the price?

Lapeer, Mich., Jan. 28.

THE CONTROL OF BEE TERRITORY.

Should a Bee-keeper have a Legal Right to a Territory? has he Already a Moral Right?

BY R. F. HOLTERMANN.

This subject has been taken up by Dr. Miller, page 41, Jan. 15, and I must confess that I admire his courage. He has tried to defend his ground by propounding some questions. Now, this part of it is very easy; but on greater deliberation, possibly these questions may not stand investigation. Let me say, how-

ever, that, like Dr. Miller, I wish very much that we might control certain territories, although the question of overstocking has never given me any sleepless nights. To compare a cow pasture to a bee pasture seems to me like comparing a man's money in a bank to the fish that swim up and down a navigable stream which is owned by the people (the country), but in which fishing can be carried on without restriction. The money in the bank the man owns in fee simple; the fishing privilege costs him nothing; but, according to the measure of his success, so the danger of others benefiting by his discovery increases. It is now about two years since I pointed out that one is rather partial toward apiculture if he says a territory belongs to a bee-keeper because he first located there with his bees. But if the visits of bees to blossoms are a good thing, and if a large number of bees in a section insures a greater yield of clover seed, alfalfa seed, buckwheat, fruit, etc. (and surely it does one year with another), then more than the interests of the bee-keeper must be considered. Not alone is the quantity of the crop greater, but recent experiments have shown that the seed, owing to cross-fertilization instead of continued inbreeding, is more vigorous; in fact, it is probably no Utopian dream to look forward to a time when seeds will have a higher value on account of the cross-fertilization being assured by reason of the apiaries in the vicinity, resulting in greater vigor and strength of the plants raised from that seed.

We as bee-keepers can not agree on or give conclusive data concerning what constitutes overstocking; much less are we able to decide on the number of colonies (or, rather, bees, for colonies vary much in strength), which under any condition will be sufficient for a good quantity and quality of seed in a given locality. Now, since this is true, what legislative body, acting judiciously and intelligently, could pass a law on the subject? If any one is bold enough to say that this could be done, then I am sure that the editor and all the readers will gladly give him space to declare himself and to submit his evidence.

I already feel quite sure that the limit of profit to the bee-keeper, when the question of overstocking is concerned, is by no means the limit of advantage to the grower of the crops above mentioned. What I mean is that, when there are too many bees kept in a district for the bee-keeper to secure the maximum amount of honey, it would still, at times, be to the advantage of the crop-growers to have even *more* bees; and, in the framing of a law, surely the crop-growers must be considered.

As I stated before when referring to this subject, we want to have our cake and also eat it. In other words, so far as it suits me I want to lay claims to the blessing that the bees are to the growers of certain crops, and yet to suit my own ends I should have to ignore that phase of the matter in determining this question of overstocking. The grow-

ers should not be allowed to keep more than a certain number of colonies, nor should they be allowed to reach the limit of benefit to their crops. This all proves to me that, difficult as the question is of solution from the bee-keeper's standpoint alone, from the grower's standpoint already indicated it is still more difficult and the moral aspect more complicated.

Now let us turn to the solution of the problem from the standpoint of bee-keepers only. I know of men, situated in excellent localities, who have perhaps ten, twenty, or twenty-five colonies, and who think that no one else should locate within a mile of their yard, or even several miles; in fact, there is a case just now that has come to my knowledge of a man who has only four or five colonies of bees, and who grows fruit and alsike clover. This party was annoyed because a bee-keeper put an apiary near him, although the other farmers about wanted the apiary on account of the fertilizing which the bees would do to the blossoms in the vicinity. This shows that the estimate of any one man as to what constitutes overstocking may be very far from correct.

Another bee keeper within a half-mile radius purchased at different times over one hundred colonies of bees, and entirely bought out the other bee-men. Some think that this man has man has no right in that locality because he does not live there.

A bee keeper for six or more years has moved to a given locality to get the benefit from a certain honey-flow. When he first moved in, another man a mile away kept about fifty colonies. This last party produced comb honey entirely, and he also hunted and fished parts of the year, thus making his living. Now, he lost nothing by reason of the first man moving in, for he became quite a large producer of extracted honey, and has gained enough confidence in the business to increase his apiary to over one hundred colonies. He is an honorable man, and yet he thinks that the first bee-keeper who was in the habit of moving his bees in for the particular honey-flow, and who had done so all the other years, should now, owing to changed conditions, move away, and that in not doing so he is not acting the part of a consistent Christian.

One more illustration: A man I know has lived and kept bees near a certain city for over twenty years. About a mile from his last apiary a farmer has gradually increased his bees until he has over one hundred colonies. The farmer, too, has kept bees for nearly twenty years. Last year the first man moved all his bees away, yet retained his bee-house and ground for the apiary. The farmer helped him move, expecting to have the location more to himself. Now a third party, whose duties necessitate his presence in the city every working day, has located one hundred colonies about a mile from the farmer. He probably would not have done this had not the first bee-keeper moved away. Now what would you do, Dr. Miller, in a case of this kind? and what would hap-

pen if the first bee-keeper should bring his bees back so that all three would be located there, together with a number of other colonies in smaller apiaries in the vicinity? I am sure if you heard of all the complications that would develop in the history of this instance you would be obliged to scratch your head and say, "I don't know."

To me this is merely one of many other big questions which will not be set right until He will rule whose right it is to rule, and who will have the power and the wisdom to decide these matters justly. Bee-keeping is not the only business in which there are problems of this kind. Laws have been framed in the effort to solve some of them, but they have been dismal failures.

Brantford, Ontario, Can.

OF WHAT DOES A BEE-KEEPER'S TERRITORY CONSIST?

BY WM. M. WHITNEY.

My apology for this intrusion is the fear that our esteemed Dr. Miller misapprehends, in a measure, my meaning respecting a matter about which he and I entertain a difference of opinion. On page 41 he says: "There are some good men too, like W. M. Whitney, who think that any man has a right to plant an apiary wherever he can get enough square rods of ground for its occupation, without any regard to surrounding bee-keepers." The doctor (for his purpose) puts the matter very ingeniously in the above statement.

Now, I wish to make myself clearly understood, without going into a lengthy discussion of the question of prior rights of individuals to territory. I am very sorry that there are even a few "good men too" like Dr. Miller who think some men have the right to plant an apiary wherever they can get enough square rods of ground for its occupation, without any regard to the rights of the surrounding owners of the broad acres which produce the flowers from which the nectar is obtained.

The doctor says: "Just keep this in mind: *No bee-keeper in this land has a legal right to his bee territory.* The fact is, *he has no bee territory excepting the ground his bee-hives stand on.*" You know laws are so unconstitutional lately that I'm at a loss to know how an act could be framed that would go through the courts without being made hash of. Perhaps the doctor does. What I claim is, that an apiarist has no moral right (and I'm quite sure he'll never acquire a legal one) to the exclusive use of territory. An apiarist has no more moral right to the control of the surrounding territory for the production of honey than has the man who starts a strawberry-patch from which he hopes to supply his neighbors with strawberries. Now, honestly, has he? Both are working for the same end—a living.

If the doctor and I could join forces and get up some scheme that would work, say, to control the territory each way from our

apiary the distance a bee is estimated to forage for supplies, i. e., about $2\frac{1}{2}$ miles, giving us a diameter of 5 miles; or, in other words, a territory 15 miles in circumference, we would have a cinch. Not only would we control all the blossoms within our boundary, but all the swarms of bees that come through the air and clustered therein would be ours, for no one else would have the right to have them. We might paraphrase the lines of Robinson Crusoe thus:

We are monarchs of all we survey,
Our right there is none to deny;
From our apiary, for miles away,
We are lords of the earth and the sky.

"But," says one, peering over my shoulder as I write, "hold on a little bit; don't get excited over this matter. It may not be so big a thing as you think, after all. Aren't you afraid that you are planning a monopoly in restraint of trade? And won't you become liable to prosecution for violation of the anti-trust law?" Hadn't thought of that. Just think of two such fellows as the doctor and myself and "good men too" getting into such a mixup as that! The smile on the doctor's face, "and one that never comes off," might get him out of the dilemma; but I'd have to go to jail sure. I'd go a long way to accommodate you, doctor; but the more I think about this matter the more I feel like shying at the whole thing. Please consider me out.

Batavia, Ill.

FOUL BROOD AND DIVISIBLE-BROOD-CHAMBER HIVES.

Can the Disease be Treated in Such Hives without Handling Frames? the Baldridge Plan.

BY J. E. HAND.

Mr. Editor:—I have had it in mind for some time to call your attention to a particular point in an editorial in GLEANINGS, July 1, 1909, page 389, on how to select a hive; but the state of my health would not permit until now. It is so seldom that one finds any thing to criticise in your excellent editorials that I deem it a luxury that I feel sure your generosity will not allow you to forbid.

From your standpoint (that of the supply-dealer) I agree with you that it would not be good policy for you to recommend any particular hive or frame to every one, for some might misconstrue your motive, even to accusing you wrongfully of mercenary motives.

In the editorial mentioned, you set forth in a fair and impartial manner the good points of the different hives, and then calmly and deliberately proceed to annihilate the sectional hive in a most complete manner. Your statement that if foul brood were likely to break out in an apiary the sectional-hive proposition would be a fright, for it is not one that will permit of the handling of all its frames with economy of labor, is equivalent to saying that it is necessary to handle all the frames in a hive in order to treat successfully foul brood, which is far from the

truth; indeed, I regard the methods that require the handling of frames in the treatment of contagious brood diseases as unscientific, bungling, and not at all in keeping with modern methods of apiculture. The infection is carried in the honey; and if a diseased colony is disturbed, as in shaking, brushing, or handling frames the bees will fill their sacs with diseased honey which is carried into the new hive, often necessitating a *second* treatment, and *always* necessitating the building of new combs without any help from foundation, which seals the fate of that colony so far as the hopes of a crop of surplus honey are concerned.

I regard the Baldrige method* as the most scientific, economical, and practical scheme that has ever been made public for the successful treatment of foul brood. By this method the bees have the diseased hive in a normal condition, with empty sacs, in search of nectar, and return to the clean hive with their sacs filled with nectar fresh from the flowers with all their healing influences; and if a stray bee happens to get into the wrong hive she carries no infection.

This method not only precludes the necessity of handling frames to any extent, but it also precludes the necessity of compelling the bees to build new combs right from the stump, as it is safe to use full sheets of foundation or clean healthy combs, which insure a crop of honey if we tier up the hives to be treated so as to get a strong force of bees in the clean hive. This is the method practiced with sectional hives. I ask you, Mr. Editor, which is the more scientific as well as economical method. No, economy of labor is not to be found in the handling of frames under any circumstances.

I call your attention to this matter partly because I feel sure you did not take the time to give the matter due consideration, and partly because your error might influence some bee-keeper who contemplates adopting this excellent hive to reject the most scientific method of treating foul brood, as well as the one hive above all others in which economical manipulation is carried to perfection.

Birmingham, Ohio.

[The editor considers himself by no means infallible; and when a correspondent thinks that any of our editorial utterances are misleading we hope he will be free to come back and say so; and he can have all the space he wishes for his reply. When an able correspondent like Mr. Hand says he seldom finds any thing to criticise in our editorials we feel complimented indeed. Perhaps not all our readers will agree with him.

Referring to the editorial in our issue for June 1, page 389 last year, perhaps the reader will understand Mr. Hand's point of view better if we introduce right here the sentence or sentences to which exception is taken. Here they are:

If, on the other hand, one has had considerable experience in keeping bees, and wishes to manage a se-

ries of outyards for the production of either comb or extracted honey, with a minimum of labor, he possibly would do well to adopt the divisible-brood-chamber hive. It is true it would cost some more for the same comb surface, yet in the hands of the skilled bee-keeper it will produce some excellent results. But if foul or black brood, or any other brood disease, happens to be in the locality we would never think of adopting such a hive; for if one is likely to get one of these diseases in his apiary, the divisible-brood-chamber proposition would be a fright, for it is not one that will permit of the handling of all its frames with economy of labor.

We will explain by saying that we had in mind not so much the trouble of *treating* a colony that had foul brood as being able to *locate* the disease in the first place in any particular hive at its very incipency. We do not know how this can be accomplished if foul brood is *known* to be in a yard (that is, has broken out in some hives) without going over *every inch of comb surface* in every hive at least once in ten days. Years ago, when we had foul brood in our home yard, we found it necessary to keep one man employed under a wire cloth cage examining brood. Whenever he found any bad cells he removed the comb, for our plan was to catch the disease at its very start, to prevent contamination of other hives near by. We do not know of any way by which the actual presence of foul brood in a divisible brood-chamber hive can be definitely determined except by examining every comb. Ordinarily speaking there will be twice as many combs in such a hive to look over and handle as there would be in a hive of ordinary standard dimensions of full-depth frames.

As to the Baldrige method of treatment, this has the merit of saving all the brood that is good, and leaving the work of melting up the combs at some convenient time, when the apiarist can take care of them to the best advantage. It would not, in our judgment, however, be a wise procedure for a beginner or an unskilled person. For that reason we believe that the ordinary McEvoy treatment is better, because the source of the infection is immediately removed. When there is fresh honey in the combs they should not be shaken but brushed. At this point our correspondent would probably take issue with us by saying that brushing and shaking increase the probability of infection; and that it would be better to follow the Baldrige treatment that does not involve any brushing or shaking. Right here there is a chance for an honest difference of opinion. —Ed.]

A HISTORY OF THE BASSWOODS.

American, European, and Other Species.

BY J. E. CRANE.

On p. 442, July, last year, is a letter from W. J. Green calling attention to the difference in time of bloom in the European and American basswoods, followed by A. I. Root's reply. Having waited for nearly six months for some one to reply, and not seeing any thing on the subject, I "take my pen in hand" to see if I can throw any light

*See GLEANINGS for Aug. 15, page 488.



AMERICAN BASSWOOD, OR LINDEN.

on the subject. As the linden is one of the greatest honey-producing plants in our northern States it is important to know all we can about this interesting family. The more is this true as the time has come when we must begin to raise timber to supply the ever-increasing demand for lumber; and basswood is one of the most rapid-growing

deciduous trees that produce good soft lumber.

There are recognized by botanists some twelve distinct species of basswood, or linden. Three of these are native to the United States, six to Europe and Western Asia, and three to Eastern Asia. Several of these species are known under a common name,

and other species of them under several names, and several running into varieties, so that the nomenclature has become very uncomfortably mixed, and we are not at all sure by the name given to what species it belongs. Nurserymen do not appear to be as particular as they should in giving the correct botanical name of plants they propagate.

Now let us see if we can bring order out of confusion. Let us first take our American lindens cut up into three species:

1. *Tilia Americana* (also known as *Tilia Caroliniana*, *American linden*, or *basswood*, which is too well known to need full description. It should be mentioned, however, that it is quite variable in its habit, size, shape of leaves, color of bark, and also time of bloom. Two varieties of this species are known as *Tilia macrophylla* a large-leaved variety, and *Tilia moltkei*, a very large-leaved strong-growing form that originated in cultivation in Europe. This species is found through the northern States from Maine to Minnesota.

2. *Tilia heterophylla* (also known as *Tilia alba*). This tree attains a height of 70 feet; has large leaves from five to eight inches long, smooth and shining above, whitish and tomentose beneath, with fruit globular, not ribbed; blossoms in July. Its home is in the Alleghenies and westward. This species has been sent out as *Tilia macrophylla*, thus confounding it with *Tilia Americana*.

3. *Tilia pubescens* (also known as *Tilia Americana*, var. *pubescens*), as it is similar to *Tilia Americana*; but it is a smaller tree with its winter buds, finely pubescent leaves smaller, obliquely truncate at the base; glabrous above, pubescent beneath; floral bract rounded at the base, fruit globose. This species is found from Long Island to Florida, and west to Texas. It is less ornamental than the other native species, and is rarely found in cultivation.

EUROPEAN SPECIES.

1. *Tilia petiolaris*, also known as *Tilia Americana*, var. *pendula*; in horticulture as *Tilia argentea*, var. *pendula* and *Tilia alba*, var. *pendula*; also as *Tilia pendula*.

SILVER LINDEN AND WEEPING LINDEN.

This is a medium-sized species with slender, somewhat penculous branches; leaves pale green above; silvery, and finely tomentose underneath; 3 to 5 inches long; petiole slender, as long as the blade; blooms in July; from eastern Europe; said to be one of the best of the European kinds.

2. *Tilia tomentosa*, also known as *Tilia argentea*, *Tilia alba*, *Tilia alba*, var. *Spectabilis*, also *Tilia alba pyramidalis*, white or silver linden, and is the larger white or silver linden of Europe, growing some 40 feet high, having a rather dense pyramidal head, leaves suborbicular, 3 to 5 inches across, unequally cordate, serrate, densely white tomentose beneath, with blade from 2 to 4 times as long as petiole; fruit slightly ribbed and tomentose. Time of bloom very variable. This species is from eastern Europe, is quite dis-

tinct, and is known as the white lime of Europe, and is doubtless the same kind mentioned by A. I. Root on page 442.

3. *Tilia platyphyllos*, sometimes known as *Tilia grandifolia*. This is the broad-leaved linden of European plantations, and supposed to be the largest, reaching 90 feet in height. Leaves are large, green, pubescent often on the upper side to some extent, unequally cordate, petioles and veins hairy; fruit 5 rarely 4 angled, tomentose, and thick-shelled. This species is often sold in this country as *Tilia Europæa*. This species is very variable, producing several well defined varieties—*rubra*, with bark of branches very red; *pyramidalis*, an upright grower with reddish shoots; *aurea* or *sulphurea*, with yellow bark or branches; *laciniata* or *laciniata rubra* with deeply cut leaves and reddish young bark; also *vitifolia*, vine-leaved.

To us the most interesting thing about this species is that it blossoms some two or three weeks before our American species, and is the earliest to blossom of any species of linden so far as I am able to learn.

4. *Tilia vulgaris*, also known as *Tilia Europea*. This species grows nearly as large as *Tilia platyphyllos*; has large unequal or oblique cordate leaves; smooth and green on both sides; tufts of hairs in axils of veins whitish; fruit globose or oval, tomentose; shell thick, and blossoms a week or ten days before our *Tilia Americana*. This is said to be the celebrated species of Berlin, and is often sold in this country as *Tilia Europea*.

5. *Tilia ulmifolia*, also known as *Tilia cordate*, *Tilia parvifolia*, *Tilia Sibirica*, *Tilia Europea*, and *Tilia microphylla*. It is of slower growth, and usually a smaller tree than *Tilia platyphyllos*; leaves small, thin, cordate, green above, silvery beneath, with tufts of rusty hairs in the axils of the veins; fruit globose, sometimes slightly ribbed, and very thin shelled. It is of special interest to us from the fact that it is very late in flowering—probably ten days or two weeks later than our American species.

6. *Tilia dasystyla*, or *Crimean linden*, is described as leaves tough and leathery, dark glassy green above, pale beneath, with tufts of brown hairs in the axils of the principal veins; bark of young branches bright green; leaves often obliquely truncate at the base; native of Eastern Europe and Western Asia.

ASIATIC SPECIES.

1. *Tilia Mongolica* is described as a slender tree with very small orbicular or ovate leaves, truncate at the base, usually three-lobed, cuspidate, coarsely serrate, with acuminate teeth, glaucous beneath, or green, on vigorous shoots; lyme rather dense, with stalk naked at the base—native of Eastern Asia.

2. *Tilia Mandshurica*—a tree attaining 50 feet, with spreading (often somewhat pendulous) branches, leaves large, from 5 to 8 inches long; orbicular to broadly ovate; cordate or truncate at the base; rather coarsely serrate with spreading teeth, floral bract almost adnate nearly to the base of the peduncle; fruit globose, thick-shelled; five furrows

with a slight cavity at the insertion of the pedicel. A variety has leaves edged with yellow or a lighter green, from Eastern Asia.

3. *Tilia Niqueliona*—a native of Japan, attaining a height of 100 feet with usually an oblong head; leaves ovate, truncate, or slightly cordate at the base, gradually acuminate, rather coarsely serrate, with incurved teeth 4 to 6 inches long; floral bract adnate almost to the base of the peduncle; fruit globose, thick shelled, five-ribbed only at the base; time of bloom not given.

Now, what of all this, or of what value to the bee-keeper? Let us see. We find that our *Tilia Americana* varies in the time of its bloom—I think fully ten days, for I find trees near together, one commencing to bloom many days before the other. If the weather is not too hot a tree will continue, after commencing to bloom, for two weeks, thus giving us about three weeks of bloom. It is probable that trees in forests or on high hills will lengthen the season. If we can find some other species that will bloom a week or ten days later, as Mr. Green and A. I. Root have told us on p. 442, we may add ten days to the length of the season. And, again, if we have or can find some species that will bloom ten days earlier than our American species we are doubling the season of bloom. I have shown in the above account of European species that there are at least two that are earlier by far than our American species. But isn't there some mistake about that? Can it be that Europe can furnish species that will bloom so much earlier and later than our own? It certainly is so, for we have a European species on our college grounds right here in this town that blooms from ten to twenty days earlier than our native basswood, as I have watched it for the past thirty years or more.

There have undoubtedly been large numbers of European linden set out in and near our large cities; and will not near by beekeepers watch the difference in the time of bloom, if any are observed blooming either earlier or later than native trees, and report, sending specimens of leaves and blossoms and fruit to State experiment stations for correct botanical name?

This is a work our experiment stations should take up, and find out the most desirable species to plant for timber as well as for the bee-keeper, that those who plant trees may do so wisely and to the largest economic value of the country. Can not our bee-keeping friends across the great water tell us more of the time of bloom, and value of the European species?

Middlebury, Vt.

CELLAR AND OUTDOOR WINTERING.

A High Temperature Now will Mean that Brood-rearing will Start too Soon.

BY J. E. HAND.

Packed in one end of our house cellar, four and five deep, are 105 colonies which were put in Dec. 5. In the center of the end

occupied by the bees is a window 14×28, opening underneath another building, the foundation walls of which are well ventilated. Said window has not been closed since the bees were put in. The temperature has ranged between 45 and 50°, mostly the latter. The cellar is apparently as dry as an upper room; and, notwithstanding it is entered every day, and sometimes oftener, the bees are very quiet indeed, and, to all appearances, are wintering perfectly. The hives are pushed forward on the bottom-board so as to give two openings at the bottom, and the tops are covered with a piece of carpet or heavy cloth. The high temperature will undoubtedly induce early breeding, which is not desirable, and from now on we will reduce the temperature by leaving the out-side door open every night, when the temperature is below freezing. We find that a high temperature and a dry cellar with a pure sweet atmosphere is a safe place in which to winter bees.

We always winter our strongest colonies out of doors, believing that a bee-keeper who would do credit to his chosen profession should be able to winter his bees successfully either way as well as to produce either comb or extracted honey at a profit.

Our outdoor colonies are for the most part in winter cases surrounded by two inches of sawdust on the sides and five inches on top. Some have sealed covers, and all have three thicknesses of carpet or heavy cloth, either laid upon a honey-board or upon the sealed cover, hanging down over the side of the hive, after which the sawdust is poured in and worked down around the hive, and the five-inch tray rounded up full. When a seven-inch waterproof cap telescopes over the winter case, the entrance is $\frac{3}{4}$ ×3 inches.

Our bees are, for the most part, in sectional hives; and past experience has taught us that we have little cause for anxiety for their welfare.

We have been equally successful with the following method of outdoor wintering: Lay several thicknesses of old carpet or burlap sacks upon the hives, letting them come down well over the sides. Over this lay several thicknesses of newspaper, and over the whole push down an 11 inch waterproof telescope cap. For the latitude of Northern Ohio, all three of these methods seem to be equally successful; however, the latter one appeals to us on account of its simplicity of equipment and economy of manipulation.

A word about the much-mooted question of moisture-soaked absorbents. I don't know what causes it at Medina, but I do know we don't have it up here in the lake regions, notwithstanding the moist atmosphere. I suspect three thicknesses of carpet has something to do with it.

Birmingham, Ohio.

[We have no moisture in the absorbents over a sealed cover; i. e., a super cover sealed down with propolis so that no dampness can escape into the packing above. From your general description it would appear that you are using sealed covers, or

what practically amounts to that. Your saw-dust packing, when pressed down *tight*, in effect shuts off all upward escape of warm air, and, of course, no moisture can escape. If the packing were loose and porous like chaff, moisture would rise and lodge in the packing.—ED.]

EXTRACTING ALL THE HONEY FROM OUTYARDS AT ONE PLACE.

Hauling Extracting-supers in a Covered Wagon.

BY V. V. DEXTER.

We need all the information about black brood that we can get out here in Washington. One of our largest bee-keepers has either pickled or black brood all through his apiaries. I have read of no one using the same methods in extracting that I do; and possibly by telling my ways some one may gain new ideas. I live in town, and have about 500 colonies in 7 apiaries, placed all the way from 4 to 15 miles from home, and have about two extracting-supers, Langstroth depth, for each hive.

I do my extracting at home, hauling the honey there in a canvas covered spring wagon painted white. It is bee-tight, and has a small screened window with bee escapes on each side. The door is in the back end. The wagon will carry about 2000 lbs., or 50 supers; but this is hardly enough, and some day I am going to have a larger wagon, provided foul brood does not get the better of me.

My extracting-house is 20 feet square, and has a cement floor. Across one end is a platform about 8 feet wide, one end of which is partitioned off for a warming room, the floor having openings in it to admit heat from a stove underneath. On the end of the platform opposite the warming-room is the extractor, and next season I expect to have an engine near the extractor; but down on the cement floor stands a 2000-lb. tank into which the honey runs from the extractor. After the specks of comb have risen to the surface the honey is run into cans which are placed in a hole in the floor under the faucet.

There is a door opening outdoors from the platform, through which the full combs are unloaded and carried into the warming-room. The threshold of the door is on a level with the platform, and also about on a level with the floor of the wagon-box, which makes unloading more convenient.

This year I melted my cappings as they fell from the capping knife; but I do not like that way, as it is very uncomfortable working over a hot stove on a warm day, and we do have some very warm ones here. Next year I shall uncap into a large dishpan and then empty the cappings into the capping-melter in another part of the room. I would leave them to be melted later, but it is not nice to have a lot of cappings lying around.

The past year has been practically a failure here so far as bees are concerned. The

farmers are plowing up the alfalfa, our principal honey-plant, and putting in fruit, from which the bees gather almost no honey, as our springs are usually cold and windy.

North Yakima, Wash., Jan. 15.

[A number are finding it more convenient to uncap into a separate can, which may be emptied, as often as full, into the melter. Others confine the heat of the melter by wrapping several layers of asbestos paper around it so that the heat radiated is not objectionable.—ED.]

MORE ABOUT COTTON AS A HONEY-PLANT.

BY J. D. YANCEY.

As to the quality of cotton honey, I can say from my own experience that it varies in color from light amber to almost water-white. While I do not consider it the equal of white-clover honey in flavor, it is superior to basswood. My experience with it dates back some 14 years to Hunt Co., Northern Texas, where it was our main dependence for a honey crop. The bees worked upon it continuously, more or less (depending on whether the weather was favorable to the secretion of nectar) from early in the blooming season until long after the first frosts. As mentioned by D. P. Hunt, page 21, Jan. 1, the flow increases toward the last of the season; and if we can get two weeks of nice weather after the first frosts it generally amounts to a considerable increase in our crop.

I distinctly remember a season when we secured a considerable extracting after we had given up all hopes of a crop, and the bees went a distance of three to four miles to the river bottoms, where the cotton had not been injured by the severely dry weather as it had on the prairies around us. The honey, however, from cotton growing on heavy bottom land is not so light-colored nor as finely flavored as that gathered on the lighter and dryer soils of the uplands—at least such has been my experience.

Besides the nectar-glands mentioned by Mr. Hunt, there is on the under side of the leaf, on the center rib, a small gland that at times secretes a considerable amount of nectar. This gland seems to be the most active about the time the leaf reaches full maturity. When atmospheric conditions are just right, such large drops of nectar will collect on these leaf-glands that one may readily taste it; and a bee has to visit only a very few to obtain a load. At such times they neglect the blossoms entirely, and the honey comes in with a considerable rush. I could not tell that this honey was any different in either color or flavor from that gathered from the blossoms.

In a ten-year residence in Southern Texas I have never noticed bees work on cotton as they did in the northern part of the State.

Bridgeport, Wash.

HEADS OF GRAIN FROM DIFFERENT FIELDS

FLORIDA HONEY THAT FOAMS WHEN PUT IN A WARM ROOM.

What can be done with honey that becomes foamy or braded like when placed in a warm atmosphere? What I have in mind is honey from tupelo and snow-vine. My theory of the cause of this is that the acid from each is such that it will not do to put the two together; and the only remedy I know of is the mixing of a proper proportion of orange honey.

Washington, Pa., Dec. 20.

H. E. DILLE.

[As the questions here asked refer to Florida honeys that foam they were referred to Mr. O. O. Poppleton, who is an acknowledged authority on Florida honey and Florida bee-keeping. His reply will be read with interest.—ED.]

Mr. Root:—Yours of Jan. 22, inclosing a letter from Mr. Dille, has only just reached me, owing to my being on an inspection trip to my bees down on Key Largo, away from mail communication.

I have had only a limited experience with foamy honey, and most of that was unsatisfactory. I had half a barrel of such honey in Iowa, and that cured itself by being allowed to candy solid. I then skimmed off the liquid honey that remained on top of that which was candied, and all the rest. The portion which had candied very hard and solid was first class. It appeared as though the thin foamy part of the honey would not candy. The poor part of the honey, that which remained liquid, was only a small part of the whole—less than a twentieth. If this particular lot of honey Mr. Dille refers to is in the North, where it will candy solid, I would suggest that he try allowing it to do so in a suitably shaped vessel that will allow it to be properly skimmed after being candied solid except the top; then by the usual process reduce the candied part of the honey to its original liquid condition. It is a question with me whether, in this particular instance I refer to, the real curative agent was the candying or the after-reliquifying by heat; but I suspect it needed both.

Honey kept in a southern climate does not candy solid enough to use the above process, and I have had only the one experience referred to in the North; and all bee-keepers know how apt single experiences are to lead one to wrong conclusions; so what I have written is only a suggestion which may call out something much more valuable.

In addition to the above I would say that I do not think Mr. Dille's theory of the cause of the foaming is correct. Mixing two kinds of honey would cause no trouble unless one of them was of bad quality. I have seen some honey that was full of air-bubbles under the caps, and such honey is sure to foam after extracting. It seems almost impossible for the bees to cure some kinds of honey properly, but they will seal it up all the same.

Stuart, Fla., Feb. 5.

O. O. POPPLETON.

A NEW WAY OF USING THE CAPPING-MELTER.

I have used a capping-melter the past season, and I think it is one of the best things that have been put out of late. I injured the honey the first time by having too much heat; but afterward I used just enough heat so that the wax would not cool in the end of the spout and clog, and the honey so obtained is improved. I let the cappings fall from the knife into a tub and drain a short time, and then dip them into the melter as needed. The cappings are all melted by the time the honey can be drawn from the extractor. I have two reasons for allowing the cappings to drain before putting them in the melter. I have two uncappers part of the time, and the capping-melter is hardly big enough for both of them. A large galvanized tub with a quarter-inch-mesh strainer allows two-thirds of the honey to drain out in a few minutes so that there is not so much to heat, and quicker work can be done. Then I turn the heat down so that the wax will cool and harden in the outer end of the spout, then increase it slowly until it runs freely. By this process no harm is done to the honey.

Vesper, Wis.

A. B. WHITE.

TWENTY YEARS' EXPERIENCE SHOWS THAT BEE-STINGS DO NOT CURE RHEUMATISM.

Dr. A. F. Bonney, p. 784, Dec. 15, is right in his opinion of bee-stings as a cure for rheumatism. Those having old volumes of GLEANINGS will, by referring

to p. 994, Dec. 15, 1889, see that I was enthusiastic in an article hailing the bee-sting remedy. Now, after twenty years of experience with rheumatic pains and bee-stings as a side-issue, I have come to the same conclusions as has Dr. Bonney. Take one hundred persons who have had rheumatism and been cured, you will find that scarcely any two of them used the same remedy. The fact is, very few of them ever experienced rheumatism to the degree that I have and are now cured. Sometimes the terrible malady will apparently leave its victim; but in an old chronic case like my own there is no cure known or guaranteed except through quackdom.

THE MILLER CAGE DESCRIBED YEARS AGO.

IN GLEANINGS, p. 769, Oct. 1, 1889, there is a cut of a cage that I devised to introduce laying queens on the candy plan, and an article describing my method of using it. The Miller introducing-cage now used almost universally is identical with my device in every detail, except that the Miller cage is flattened and will go between the brood-combs without spreading them, and the queen is released without further molestation, which is an important factor in introducing queens successfully.

Shickshinny, Pa.

S. W. TAYLOR.

ARE EXCLUDERS HONEY-EXCLUDERS?

In my opinion excluders are honey-excluders to a certain extent. The excluder is a tight fit for a honey-laden bee. Just take it home to yourselves—if you had a pack on your back, and had two doors you could go through, wouldn't you choose the larger one? If the flow is light I can imagine them saying, "Oh, well! I don't want to get any honey to-day. There isn't much honey, anyway, and I hurt myself so much pushing and shoving through those bars." To prove this, I will say that the bees do not carry honey below half so much when the excluder is on, and I presume it is for the same reason that they do not carry it above quite so willingly as though the excluder were off. The hive that has an excluder on always has more honey in the brood-chamber, and less brood than the one that hasn't one. And then they say the excluder queen was not so prolific as the other. Strange that it should be this way 80 times out of 100 at least.

As to distance making a difference in the amount of honey gathered (see page 22), I should say it does. When the distance is close they make more trips during the day, and it stands to reason that if they have to go a mile they can't gather honey as fast as if they had to go only a yard. As well ask, does a high wind have a bearing on the amount of honey gathered? Are they not both a hindrance? Their water also should be close at hand so that they won't have to waste more time than is absolutely necessary.

MRS. M. E. PRUITT.

Ranch Vigo, Eola, Tex., Jan. 7.

[There has been some discussion on this question, pro and con; but some of our best bee-keepers—those who produce honey by the carload—make the unqualified assertion that excluders do not in any way interfere with the amount of honey stored above. While they do exclude pollen to some extent, this very exclusion is something that is desired, for it is better to keep pollen out of the surplus honey.—ED.]

HOW FAR DO BEES FLY?

Myself and neighbor own the only Italian bees in the county, and it is seven miles in an air line to Hamburg. Last spring I transferred eight colonies for Mr. C. L. Baker, of that place. I commenced about 9 o'clock, and by 10 o'clock I noticed 5 or 6 Italians there attempting to rob. By 3 P.M. it looked as if I could have hived a pretty good swarm of them. The next day there were more of them. Now, where did they come from?

Hamburg, Ark., Dec. 16.

W. D. JOHNSON.

[It is our opinion that your own Italians did not fly seven miles. While we have known bees to go that distance over a body of water, it is very doubtful whether they would go as far as that unless it were over a valley from one hill to another; and even then the maximum distance, we should say, would be five miles. The reports that have come in during the past few months have indicated pretty conclusively that, as a rule, bees do not fly over an average range of much more than a mile and a half; and apparently most of the honey is gathered within a radius of one mile from the yard. While there are exceptions, of course, yet these exceptions only prove the rule. If you will find a little carefully and make some inquiry you will find, in all probability, that there are some Italian bees in the locality not far from where you did the transfer—

ring. If you had taken pains to "line them up" we think you would have found they were not going to a place seven miles away, but to some point near at hand.—ED.]

WHAT IS THE YELLOW DUST UNDER THE BROOD-COMBS? THE PROPER SPACE UNDER THE BOTTOM-BARS IN WINTER.

1. What is the yellow dust to be seen on the bottom-board of the hive during the winter months—sometimes considerable? I have seen something like it during the summer when bees gnaw combs. Are colonies in good condition when considerable of that dust appears?

2. Will the bees clean up dusty sections that have starters in them? The reason I ask this is because at times this is a dusty country, and otherwise I could not save any sections by the superfluous t over from a previous year and which have been drawn out considerably at times.

3. For colonies wintered outdoors, is it advisable to have much space below the frames and above the bottom-board during the winter, considering them to have, of course, the entrance contracted to $\frac{3}{8}$ x 6? Chadron, Neb., Feb. 1. LEE CARD.

[1. We do not know that we are able to give a really positive answer to this question. The yellow dust may be particles of propolis and the leavings of pollen which the bees do not use, or a sort of pollen mold or dirt. Any dust or litter that comes in contact with bees will generally become more or less soiled, and take on a yellow color. The suggestion has been made that bees use only the pollen that has been mixed with honey. If the combs are well supplied, the presumption is that all the pollen in the form of dust that brushes off from bees that come into the hive is neglected or not used. If so, it may be and probably is taken at other times when there is a scarcity of nitrogenous food in the hive.

Yellow dust on the bottom-board of hives that accumulates during the winter months is no different from that which accumulates at other times of the year, probably. In any event, its presence does not signify that there is anything wrong with a colony. There will nearly always be such leavings with any good strong stock.

2. A good rousing swarm, when it enters its new quarters, will do a good job of housecleaning; but if dusty sections be placed on a hive during a big honey-flow the probabilities are that the bees would not stop to clean them up. They might do so if they had plenty of time. It would, therefore, be advisable to have all sections as clean as possible.

3. In either indoor or outdoor wintering it is advisable to have as much space under the frames as possible for the accumulation of dead bees. Their carcasses will often close up the space between the bottom of the frames and the bottom-board; and during the latter part of winter and early spring the accumulation will very often clog up the entrance. A closed entrance usually means death to the colony. The greater the space between the bottoms of the frames and the bottom-board, the less liability of clogging the passage-way to the entrance. Generally it is not practicable to have a deeper space under the frames than $\frac{3}{8}$ inch in the average hive. The modern hives turned out by most manufacturers now have reversible bottom-boards having a $\frac{1}{2}$ space on one side and $\frac{3}{8}$ on the other. With such boards one can give additional space. The entrance should, of course, be $\frac{3}{8}$ x 6 inches, or preferably $\frac{1}{2}$ x 6 or 8 inches; but with such a narrow slot it is very important to see that the dead bees are raked out occasionally, especially toward spring.—ED.]

WHY DID THE BEES UNCAP THE HONEY?

I don't understand my bees this fall. They seem to have uncapped a quantity of honey. Not long ago they seemed to have enough for the winter all capped, but when I looked at them a fortnight or so after, they had uncapped nearly all of it. There seemed to be a good deal of honey; but very little of it was capped.

MISS MARGARET V. HAMILTON.

Aurora, Ind., Dec. 17.

[We are unable to explain why your bees should, within a period of a few days, uncap nearly all their honey. The only suggestion that we can offer is that robbers from without made an onslaught on this hive; but if that had occurred, you or your neighbors would have had knowledge of it, and the robbed colony would have been deprived of all its stores.

Can any of our readers offer any satisfactory explanation?—ED.]

WHAT IS THE LEAF-CUTTER BEE?

Will you please tell me what the leaf-cutter bee is? I have never observed it.

Bradshaw, Neb.

C. B. PALMER.

[This was referred to Prof. H. A. Surface, who says:]

The editor has forwarded me the letter and specimens. I find upon examination that these are the nests of the leaf-cutter bee, belonging to the genus *Megachile*. The larvae, or young, are contained therein. This bee makes its nest by cutting round pieces out of leaves and pasting them together, as you have observed. Such are the facts in the case. As to how this comes to be so, there is some speculation and the rest is guesswork. However, it is my idea that the parent leaf-cutter made her nest inside the bee-hive, and the honey-bees left this without notice for a while, perhaps because they were very busy with the nectar-flow; but when they realized the presence of an intruder they cast it out and you found it in the entrance. There may be some other explanation for its presence there, and I suppose that another person's guess might be as good as mine in this regard.

H. A. SURFACE,
Economic Zoologist.

Harrisburg, Pa., Sept. 22.

FEEDING ARTIFICIAL POLLEN INSIDE THE HIVE.

I have been reading the article by F. Dundas Todd, p. 53, Jan. 15, and will offer my plan of feeding pollen. I take a piece of canvas (8 or 10 oz. duck), one inch short of length and depth of frame used in the hive. I tack a $\frac{1}{8}$ strip on each side of the top edge to act as a top-bar, so that the canvas may hang on the rabbets like a frame. Then I paint each side of the canvas with hot extracted honey and hang it in a very warm place until the cloth appears quite gummy. Finally I coat a large plate very thinly with honey, spread on the flour, and mix well. Care should be taken not to have it sticky. I find a putty-knife is a fine thing with which to mix it, then spread the mixture on each side of the canvas. One of these frames hung in a pollen-famine colony will help wonderfully.

Three Rivers, Mich.

WM. Z. RUGGLES.

DYSENTERY STAINS WITHIN THE HIVES.

Did you ever know your bees to smear their hives all over inside of the hives? I have two that did today, and yet they did not fly much. What would you do with them? Those I fed on sugar are all as nice and bright as they were in the fall. The two in question have all honey-dew.

ROBERT INGRAM.

Sycamore, Pa., Jan. 20.

[When a colony has dysentery so badly that it stains the inside of the hive it is usually past recovery unless settled warm weather comes on almost immediately. We are not surprised that there should be so great a difference in the condition of colonies fed on sugar syrup and those having only honey-dew. Reports have shown this before.—ED.]

GETTING RID OF RATS WITH SULPHUR.

I moved to my present home two years ago, and found the place alive with rats. They were in the barn, house, out-houses, woodpile—in fact, everywhere that a rat could hide. Last year in putting up my corn I sprinkled sulphur in it as I put it in the crib; also on hay, oats, etc., and now there is not a rat on my place. Some of my neighbors have tried sulphur, and they have no rats. I use about one pound of sulphur to 100 bushels of corn. I sprinkled it around well next to the wall. I believe that rats can be driven entirely away by the use of sulphur.

Brookston, Texas.

J. R. SCOTT.

[Has any one else had any experience in the use of sulphur in getting rid of rats as here described?—ED.]

HONEY THE SAME PRICE TWENTY YEARS AGO.

It is rather poor encouragement for bee-keepers when honey is 12 to 16 cts. a pound, just as it was 23 years ago. All other things are double in price.

Williamsville, N. Y.

WILLIAM IRR.

[See article by O. L. Hershisser, on page 104, Feb. 15th issue, for a general discussion of this question.—ED.]

FOUL BROOD IN A BEE-TREE.

I cut a bee-tree this fall that was two miles from any bees in hives. It had foul brood. So you see bees can have foul brood in trees as well as in hives.

Shelfin, Conn., Nov. 29.

EUGENE S. HUBBELL.

[This is the first report we have received of this character.—ED.]

OUR HOMES

By A. I. Root.

Of such is the kingdom of heaven.—MATT. 19:14.

Some years ago when *potatoes* (instead of "chickens") was my hobby I got a letter from a man in Northern Michigan who was not only a potato-grower but a great genius for *growing* almost every thing; and just then he was preparing to start melons in strawberry-boxes under glass, to be planted in the open ground later. I found out he was, by accident as it seemed, within about a mile of some land up there that I had owned for some years. Further correspondence resulted in a visit to the home of James Hilbert, of Bingham, Lelanau Co., Mich. I can't tell you now of the many things we had to look at and talk over; but along toward dinner-time Mrs. Hilbert said to one of the little girls, "Alice, could you dig some potatoes for dinner?" and as I took a look at the shy, slender little daughter of hardly a dozen years, I ventured:

"Alice, can't I go along and help?"

Her reply was hardly audible; but she gave me such a shy, sweet, childish smile I *knew* she was pleased, even if she did not say so. Then and there commenced one of the pleasantest friendships of my life. The potatoes were out near the barn where friend H. had been doing some "high-pressure" gardening, and I almost went wild with enthusiasm when Alice skillfully threw out twenty or more nice potatoes from a *single hill*. When her mother thought such a child could dig potatoes for dinner I was surprised, and it would have been a task on our average Ohio soil; but in that heavily manured, soft sandy soil, with a light shiny *potato-hook*, it was no task at all, even for a little girl. Alice was not only skillful, but she could tell *me* (who had published a *potato-book*) a lot about potato-growing in that region.

After Alice and I had become so well acquainted that she could talk to me freely, I found she had been reading my Home papers long before she ever saw me. There was a simple, honest frankness and innocence in her make-up that I think I had never seen before or since. Once on our way to Sunday-school she said, "Mr. Root, I loved you before I ever saw you." About that time, or later, she said also, "Mr. Root, I want to be a Christian, and I want you to be my teacher, and to show me how." Was not that a sacred and solemn responsibility placed on my weak shoulders? I told her I would gladly help all I could, and she used to tell me of her troubles in school, and ask me if she did right in her way of settling them, etc. Her father gave me an illustration of her loving and forgiving disposition. He said that, from a child up, when he felt obliged to punish her for some little thing she would come to him before the tears were dried on her little cheeks and say, "Papa, I love you." She evidently wished to have him understand that her faith and confidence in him were so

great she felt sure he would never correct her unless she deserved it, and that it was for her greatest good. Can we of mature age show this confidence and trust in our heavenly Father when we are chastised?

If I am correctly informed, Alice was baptized and taken into that Bingham church amid the hills, alone by herself; and *before* the revival I told you about some years ago. I think she told me also on one communion day that she, the mere child, was the only one in the whole audience who would partake. I presume the older Christians, from some mistaken notion, considered themselves "too unworthy."

Dear friends, my heart is full of sadness and sorrow to-day, for our yesterday's mail informed us that my gentle friend Alice is dead, and buried in that Bingham cemetery on the snow-capped hill near that little church. She wrote us last summer that the doctors told her she had an incurable disease, and that her stay in the world was not to be long. She said the Savior I taught her to trust in and love was ready to receive her, and she was ready to go, but that she disliked to leave her *two* motherless little girls. I wrote back to her to cheer up; that I would be up there soon, and may be we could persuade her to stay with her husband and the two little girls in spite of the prediction of the doctors. I wrote her something like this:

Dear Friend Alice:—You have paid me a great compliment by saying I have taught you how to die. Now, God grant it may yet be my privilege to teach you how to live.

I had in mind Terry's teachings, etc. Well, I fully expected to go up to that "old cabin in the woods" last fall, but I didn't get around to it. I fear that Simplicity incubator had something to do with it. May God forgive *me* for letting *anything* stand in the way of my duty toward my old friend Alice.

Kind, gentle, loving Alice is gone, and we can not call her back; but her brief bright life should teach us some lessons and point out some warnings.

Mr. Hilbert is a great worker, or was one. His children, like himself, have all been great workers. I have told you in years past how many potatoes they dug and picked up in a day. With his wonderful crops of strawberries, cherries, peaches, etc, his whole family *had* to work. I feel sure Alice worked too hard when she was young and growing rapidly. I often protested; but she was ambitious, and had the Hilbert enthusiasm. I am sure my good friends Mr. and Mrs. Hilbert will excuse me if I speak of another thing. It *used* to be quite the fashion then to have many parties that kept the young people out late. Before Alice came into the church she was out nights altogether too much for one of her age. Her father "scolded," but the young ones were head-strong.

Once when I was there he was up bright and early, and was going to hustle up all the youngsters. I plead for more time for them to get their sleep, reminding him they were

late getting home. He declared the best way to punish them for disobeying his positive command was to *make* them get up at the usual time. He may have been right; but let me beg of you, dear fathers and mothers, beware how you choose any method of discipline that breaks the needed rest of these young ones God has placed in your care.

Last, but not least, Alice, with her wonderfully loving disposition, was married and became a mother several years too soon. If I in my advice about marriage have induced any boy or girl to get married while in the "teens," I want to take it back. No man or woman should think of assuming the sacred and solemn obligations pertaining to married life until such person has arrived at *full maturity*.

Almost the last time I saw Alice she came over to our "cabin in the woods" when Mrs. Root and I were getting ready to leave for Ohio. I was burying some choice potatoes that I wanted to plant up there the next spring. Alice had grown taller, and thickened up, until she was quite a strong healthy-looking girl of perhaps 16 or 17. I pronounced my potato-pit ready for winter. She took exceptions to my work.

"Mr. Root, your potatoes will all freeze if you leave them that way. I am 'an old experienced hand' in such matters. Give me that spade."

I attempted to remonstrate, but she laughingly declared she would take the spade away from me unless I handed it over. I shall always remember with what grace and skill she made a neat-looking potato-pit. I remember wondering at the time if some young man had not already gotten his eye on her. She was then "fetching up," as it were, after the hard work of childhood, and was just about to "bud and blossom" into glorious womanhood; and it was just about this time, or a little later, that she married. Ask Terry; ask the doctors and our great humanitarians what *they* think about marriage at such an age. At barely 20, when she ought to have been a blessing to the world, she was laid under the wintry sod, leaving two little motherless girls.

May God in his great mercy help us to learn the lessons he is striving to teach in this present age of progress, especially the lessons in regard to these frail bodies he has given many of us to care for.

Gentlemen:—Enclosed find check for \$2.00. Please send two copies of "How to Keep Well and Live Long," by T. B. Terry, to the addresses inclosed. I have enjoyed reading mine so much that I want two more copies for these friends.

Stroudsburg, Pa., Feb. 2.

W. H. TRUSLOW.

The above is one of the characteristic letters we are getting regarding Terry's book. Our first supply of these was exhausted in less than two weeks from the time the first notice appeared. We were obliged to keep some of our friends waiting a few days before the second lot was ready, but we have now another good stock on hand. In all our experience we have seldom found a book selling at \$1.00 or more that has been so favorably received as has this book; and from no one have we had a single word of complaint regarding it.

POULTRY DEPARTMENT

By A. I. ROOT.

GETTING EGGS IN ZERO ° EATHER BY MEANS OF A LAMPLESS BROODER.

On page 62, Jan. 15, I mentioned the Clough lampless brooder, and said it would house half a dozen pullets until old enough to lay, etc. Below is an account of a recent experiment by the inventor:

Mr A. I. Root:—It may be of great interest to you to know that we in the frozen North have been and are now having a most severe winter—snow or sleet most of the time; snow a foot or more deep; and with the rain, hail, and sleet it is more ice than snow. Railroads and street-cars are blocked half the time—coal very short. With me every thing is w-l-l. I am very busy, and at the same I am making some experiments this cold weather that I could not make if we had a mild winter.

Perhaps you have noticed that I have said something about keeping laying hens for eggs in my brooder, and said that a hen-house was not needed, etc. Well, on the 15th of last November I went to my neighbor's and bought eleven Buff Orpington hens. They were one year old, and were laying from three to five eggs per day. I took them home and placed them in my scratching-shed, and before the snow they had the run of the lawns. They did not stop laying because of their new surroundings, but they were not all in perfect health. Some of them had a slight cold, or roup, as it might be called; but as I claim my brooders are a good remedy for many chicken diseases it did not frighten me. I placed a brooder in the shed for them to roost in; but as they did not know any thing about "Clough's lampless" they commenced to *look up* for perches to roost on when night came. I expected this, and so was on hand and gently guided them into the brooder. It was a hot time for them, for it was warm weather, and so I let them nestle around outside the brooder, with two or three inside of it. This went along all right until Dec. 8, when the thermometer registered zero, and then the hens did not need any urging to enter the brooder, and they did not come out to cool off either. Some of them would stick their heads out for a few minutes, and then move back and let some others come near the door. Well, they produced the eggs just the same. That day they laid eight eggs. Since that time it has been 23 times from zero to 20 below, and these chickens (or hens, rather) have laid every day from two to seven eggs to date. They have become entirely well, and are in better condition every way than when I bought them. I have made inquiries all over this city, and outside to neighboring cities, asking the question, "Do you get any eggs this cold weather?" The answer has been, "No eggs."

I will now tell you how I fed them after the snow came, and they did not get out. Their first feed is hash in the morning, any time from eight o'clock till ten, just as I happen to feel about getting out this cold weather. This hash is made of the scraps from our table of four people, and sometimes it is not very abundant, because we eat up close. It consists of every bone and gristle from the meats; potato, onion, squash, and apple parings, not cooked, but all thrown into a pan together. To chop this into hash I made a special chopper with a hopper about one foot high and six inches in diameter. This hopper is on a solid block of wood. With a heavy chisel having a long handle to it I churn up and down in the hopper for only a few minutes, and every thing, bones and all, is made into the nicest chicken hash possible, and there is not a machine made that will work like this knife. Sometimes the hash will have too much water in it, and be too "mushy" for chicks. In that case I dump in a cup of bran and oats until it takes up the surplus water. For the last month I have put in a pint of alfalfa meal scalded, and this makes their droppings look as they do in the summer when they are getting what grass they want.

This hash is fed in round feed-pans set on legs about ten inches high; and it is a pleasant sight to look at them as they stand around that feed-pan. There is no mussing, and by the way, this feed-pan is the only

good way to feed chickens. The pan is made by using a ten-cent basin. Take four pieces of narrow board and punch a hole through the edge of the pan and drive a nail in, letting the legs flare out a little; then put a cross-piece from one leg to the other, and you will have a feed-pan that the chickens will not tip over nor muss in, and they can scratch all around and under it, and it really takes up no room. Well, hash is the morning meal. After this is all eaten, a pint of bran, oats, and wheat mixed is placed in this pan for them to eat at any time. When this is gone another is given, but not over two a day, making one quart. Along in the afternoon I give them two ears of corn scattered in the straw. I wish to say that I have beef-scrap on hand all the time, so when there is not much meat or bone in the table-scrap I put about a gill of beef-scrap into the hash-hopper. The water is heated in a coffee-pot and taken to them once or twice a day. Cold days it is boiling hot when taken out, and it will be three hours before it begins to freeze. The hens will not drink it until it gets to the right temperature, of course. They seem to use judgment in regard to this. When this water becomes cold, and ice is in it, another pot of hot water is poured in, when the ice soon disappears. At night the water-dish is emptied. This water-dish is made like the feed-dish, with the exception that four light pieces of wood are run up to a peak above the water so that the fowls can not hop up on the edge of this pan and get wet.

Now figure what it costs to feed these hens. I figure that the eggs they have laid cost less than one cent apiece, or that I am keeping these fowls at a cost of three cents a day, paying market price for every thing they eat except the table-scrap and the little time taken to care for them. You will notice that I have no feed-hoppers, so that the fowls can eat all the time. I do not think it the right way to feed. These eleven hens have laid eggs continually, I was told, since ten months ago, not stopping during the moulting season. The lady of whom I bought them told me she fed them about as I have, although she did not have the conveniences I have in the shape of tools, brooder, etc. She said they did not lay last winter, as they were then too young.

Now, Mr. Root, this way of feeding is a practical one, and is not forced. It is not a two-hundred-egg yield per hen, but it is a winter yield when no hens to speak of are laying. The number is 238 eggs from Nov. 15 to date—58 days, or a little better than four eggs a day.

Aurora, Ill., Jan. 13.

V. W. CLOUGH.

I believe it is pretty generally agreed that artificial heat for laying hens is not a success; but economizing the heat of the fowls, as above, is all right. It amounts to the same as giving horses and cattle good warm stables; and these fowls, it will be understood, can at any time put their heads out at the door and get cool fresh air. Perhaps I should explain that this brooder that accommodated the eleven laying hens is 2½ feet square, and perhaps a foot high inside, with "woolens" overhead to keep them warm.

The whole experiment as given above is really in line with the Philo system of keeping fowls *successfully* in a small space.

SPROUTED OATS OVER A FOOT LONG FOR CHICKENS.

Somewhere I think Edgar Briggs has said that chickens will eat oats when the oats have grown six inches high; but I could never get ours to swallow them when a good deal smaller, and I was uncharitable enough to think the statement an exaggeration; but, listen. Just before my brood of 70 (the ones the possums got into) were hatched, I cleared up a strip of woodland near their brooder, about 10×40 feet, and sowed it to oats so as to have them ready when the chicks were old enough to take them; and after the demise of the chicks the oats were left growing. As it was new land where one seldom gets much if any thing the first year, we cleaned out a

poultry house and worked in the whole contents on this strip. On this light sandy soil we have only to work under the roosts with hoe and rake every morning to have a nice sweet-smelling poultry-house all the time.

I think this house (of, say, 25 fowls) had been treated this way for six or eight weeks, when two wheelbarrow loads were put on that 10×40 strip. Well, for a week or two past, people have been stopping to inquire what grain or grass it was that gave such a beautiful rich dark green. I supposed it was altogether too tall to feed chickens, and was figuring on what I should do with it. Wesley gave some to the laying hens; but he said they didn't seem to want it. Finally I pulled up some from some very rich spots, and, shaking all the dirt off, carried it out to the "biddies." Now, these particular biddies have a sort of notion that I usually have some choice tidbit for them, and so they came up and began to examine and sample the luxuriant oats. I first pulled the rank stalks to pieces so they could swallow them, and by a little training I taught them the trick of swallowing oats not only a foot tall, but some actually 15 inches from tip of blade to the root. It is really comical to see them commence at the tallest blade or leaf and gobble it down until they come to the great bushy root, and then, after swallowing that too, and smacking their lips (or bills) to express the satisfaction it gives, they go for another. Since the fowls in that particular flock have learned the trick they will "get away with" a bucketful in a very short time; and my biggest egg-yield of the season followed right after this heavy feeding with green oats. Don't you see I have not only made *another* wonderful discovery, but I have made two of them? First, keep your chicken-coop clean and sweet all the time; and, secondly, use it as I have described in providing the most wholesome food for your fowls at even less than "15 cts. a bushel."

THE "BUTTERCUPS" UP TO DATE, FEB. 10.

The pullets are small, but quite handsome, though not laying yet. The cockerels, however, have manifested such evidences of precocity that I have placed three Leghorn hens in the Buttercup pen; and if we can't have full-blood Buttercups just yet we can have a few half-breeds just for the fun of it. I think the Buttercups are now about 4½ months old.

SOME OF OUR POULTRY LITERATURE FOR 1910.

In my hands is a book for which I have just paid \$1.00, entitled "The Kellerstrass Way of Raising Poultry." Just below the title on the cover we read:

You can read this book in 35 minutes; but it took me thirty-six years to write it. ERNEST KELLERSTRASS.

I suppose most of you know that Kellerstrass is the man who owns the \$10,000 pullet, and the poultry-journals are now telling us that he has sold during the past season 1024 eggs for \$2048—that is \$2.00 for each egg, or \$30.00 for a setting of 15 eggs. These eggs didn't come from "Peggy" either, but

from 30 of his best breeders, selected from a flock of 5000 or 6000. The book is a valuable one, even if it does contain less than 100 pages, and about 40 of these pages are taken up with testimonials from his customers who paid \$2.00 each for 15 eggs. The book is a big improvement in paper and print over the other dollar books that exploit "systems;" but why didn't Mr. K., with that big lot of money, put a cloth cover on his book and make it a little larger? In many respects the "book" is only an advertising medium for his \$2.00 eggs, such as our incubator people send out free of charge; and, to cap the climax, one of the pages in the back part is all taken up with the announcement that if you want his catalog of prices with *pictures* of the things described in the book (for which you have already paid a dollar), you must send *four cents* to pay the postage on the catalog. Evidently Mr. K. and some others (Burbank, for instance) do not expect to do much for the "dear people" unless they pay for it in good round dollars.

Now, I am glad to say Mr. Kellerstrass seems to have developed a wonderful strain of egg-laying White Orpingtons. The editor of *Reliable Poultry Journal* wrote to 84 people who purchased the \$2.00 eggs, and *seventy-two* replied. Mr. K. seems to have a fashion of making his customers satisfied (and well he can afford to), and a lot report getting 200 or more eggs in a year from pullets from the \$2.00 eggs; and I notice one report of 265 eggs in a year. The \$2.00 eggs are from 30 breeders selected from five or six thousand by careful trap nesting.

I want to call attention again this year to the Cyphers catalog. It contains a "secret" of more value, in my opinion, than any I have found in the "System" books—viz., a plan by which you can raise the very *best* chickens, and neither feed them nor clean out the litter oftener than *once in two weeks*. Our friends will remember I copied the process from their catalog about a year ago, and since then they have proved again the superiority of the method (deep litter feeding), not only for young chickens but for *laying pullets*.

HEALTH NOTES

MILK "STRIPPINGS" FOR CONSUMPTIVES.

Toward forty years ago, when I was taking the "beef diet" with Dr. Salisbury, he had a patient threatened with consumption, and by his orders this patient took about a pint of milk strippings right from the cow, night and morning. This patient is still alive and enjoying fair health, so far as I know, and the whole matter was brought to mind by the following clipping sent out by Dr. Kendall who is prominently connected with the Christian Home Orphanage, Council Bluffs, Iowa. Milk is surely better than medicine for almost everybody.

The most certain method ever adopted for the cure of the "great white plague" is through the diet used as per directions below, which can be taken at home,

and comes within the reach of the poor as well as the rich. The *modus operandi* is to force the body to take on fat—a desideratum long felt by the medical profession, but never before attained to.

During the last fifteen years I have prescribed this diet in hundreds of instances; and where directions have been followed strictly it has raised the weight and increased the strength and vitality of the patient rapidly up to a normal condition, thus enabling nature to assert her sovereign right to be the dominating force in the body, and the germs causing consumption have been overcome and the cure accomplished. Some have gained a pound a day, and would gradually take on less until they would not increase in weight any more.

The all-important thing is to drink large quantities of milk strippings (the very last of the milking). This seems so simple and easy that many have refused to follow directions, and demanded medicines to cure them; but there has not yet been discovered any medicine that is a specific for consumption.

To get best results a healthy cow should be selected, one that does not cough, and one that gives very rich milk. A Jersey cow is preferable. The milk should always be tested to be sure that there is a large per cent of cream in it.

The last quart should be milked into a separate dish which rests in a larger vessel containing warm water, just sufficient to prevent the strippings from cooling below blood heat. The cow should be thoroughly cleaned to prevent any dirt getting into the milk, so the patient can blow back the froth and drink at once without straining, as this cools it too much.

Begin by drinking nearly a pint in the morning and the same at night, and increase the quantity gradually so that in ten or fifteen days a full quart will be taken twice a day. It should be taken immediately after milking, before it has had time to cool any. All should be taken that can be without too much discomfort, and then rest two or three minutes, and drink more and rest again, and so on until a full quart has been taken as soon as it can be conveniently. In about fifteen minutes the patient should eat at the table such articles of food as are known to agree with the stomach. At noon eat as usual.

When the strippings are not allowed to cool below blood heat, and taken immediately after it is milked, a full quart will be transfused into the circulation in a remarkably short time.

I have never seen a case but could take the strippings without any discomfort worth mentioning when above directions were followed strictly, although some have declared they could not before trying it; but when they delayed taking for half an hour and the milk had cooled ten degrees I have seen half a pint make them very sick. The great secret of success with it is in taking it immediately after milking and not allowing it to cool below blood heat, taking a full quart morning and evening, and having milk that is very rich.

The following is a typical case. Mrs. A. E. was suddenly startled to find her weight was forty pounds below normal. She was coughing terribly, and soon had a very profuse hemorrhage from the lungs that came near taking her life. I at once began the use of the milk strippings after hemorrhage was stopped, and in about ten or fifteen days she had gained nearly a pound a day, and was soon able to get out of bed and go around the house. She increased quite rapidly; and as her weight and strength increased her cough decreased. When she had gained thirty pounds in about three months her cough had left her. I had her continue the same diet for six or eight weeks longer, and she gained ten pounds more, and then took on no more flesh. She was then as well as she ever had been, and continued well after the strippings were discontinued.

She took no medicine after the hemorrhage was stopped, excepting a little pepsin and some other remedies to aid digestion, and a simple cough remedy to ease the cough; but tar, lobelia, opium, tartar emetic, and such medicines as disturb the stomach and interfere with digestion were carefully avoided.

It is easy for those on a farm to carry out this method; and on several occasions parties who lived in the city purchased a suitable cow, and, after complete recovery in every instance, they sold the cow for nearly as much as was paid for her.

I do not remember any patient who followed the directions strictly who was not cured; but several persisted in declaring they could not take it, until so much valuable time was wasted that they lost their lives.

I have found the same diet, when these directions were carried out carefully, to increase the weight and strength of those run down from other causes.

GLEANINGS IN BEE CULTURE

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NO. 6

EDITORIAL

By E. R. ROOT.

PROSPECTS FOR MOUNTAIN-SAGE HONEY UNFAVORABLE.

MR. L. E. MERCER, one of the prominent bee-keepers of Ventura, Cal., referring to the prospects for California sage honey for the year 1910, writes: "The sage is growing very slowly, and every one says no honey this year. Of course it is too early yet to tell to any certainty, but it doesn't look good to me."

One or two other reports have been to the same effect.

THE PREVALENCE OF HONEY-DEW DURING THE YEAR 1910.

THE following letter from Dr. E. F. Phillips, of the Bureau of Entomology, will explain:

Dear Mr. Root:—Since honey-dew was so abundant in many parts of the eastern United States during the past season, it would be well for the bee-keeping industry to know, if possible, what conditions brought this on. I should very much appreciate it if the readers of GLEANINGS who had honey-dew last year would answer the following questions, and in addition give any facts which might help in solving this problem.

Was there any honey-flow from flowers?

Did bees work on honey-dew and flowers at the same time?

What was the average amount of honey-dew per colony?

On what kind of tree or trees were the insects which produced the honey-dew?

Give dates showing the duration of the honey-dew yield.

Was much honey-dew used for winter stores?

Is the mortality of colonies up to the present date greater than usual among your own and neighboring bees?

What information have you as to the extent of territory in which honey-dew was abundant?

Replies may be directed to the Bureau of Entomology, Washington, D. C.

E. F. PHILLIPS,
In Charge of Apiculture.

Washington, D. C., Feb. 19, 1910.

CORRUGATED-PAPER SHIPPING-CASES FOR COMB HONEY.

IN this issue, in his department, "Bee-Keeping in the Southwest," Mr. Scholl mentions a lot of honey that was badly damaged in the corrugated-paper shipping-cases, while that in the same shipment in ordinary wooden cases came through with little injury. Mr. J. E. Crane, on the other hand, continues to ship his honey in the paper

cases, and has no fault to find with them, his buyers even paying him more for honey in the paper cases than in wooden ones. If we are not mistaken Mr. Crane encloses each section in a carton before putting it into the case, so that there is an additional cushion, so to speak, besides the regular corrugated partitions that divide each row of sections both ways of the case. In giving reports of the results of shipments sent in paper cases we believe that it should be stated whether cartons are used for each section, and also whether cases are used made like those advocated by Mr. Crane. If breakage occurs, the paper case should not necessarily be blamed unless Mr. Crane's directions have been followed to the letter. We do not know whether cartons were used for the honey referred to by Mr. Scholl, and we are not sure that their use would have resulted in the safe arrival of the honey; but the construction of the case may have had something to do with the breakage. Since Mr. Crane apparently has no breakage, it would be well to make sure that every detail is as recommended by him.

WINTERING OF BEES UP TO THIS DATE.

WE have just looked over quite a number of our colonies at the home yard, wintered on their summer stands in double-walled packed hives. After the severe cold of the winter that has continued for these many days without a flight since the first of December (and our bees have not had a flight yet), we naturally expected to find a good many dead colonies, and the strong ones weak and suffering from dysentery. But we are happily surprised. We never saw bees in better condition than they are this 26th day of February. All colonies, both under sealed covers and absorbing cushions, are in fine order—exceptionally so. Not a single colony thus far has been lost, and in our preliminary examination we picked out all the weak ones, and those that were made up and fed late. All of them, strong and weak, were in excellent condition; and unless we have a very late spring, with warm days alternating with chilly, cold, and snowy days, there will be very little loss worth speaking of.

Reports from Michigan indicate excellent wintering, and a few scattering reports from Wisconsin show the same condition. A few stray reports from Pennsylvania and Indiana indicate a few winter losses.

Our neighbor, Mr. Wilde, some six or seven miles west of us has lost only three colonies out of one hundred; and while there are some few weak ones he says the rest of the colonies are doing well.

This has been an exceedingly favorable winter for cellar or indoor wintering; that is to say, it has been easy to control the temperature. For that reason we shall expect all inside wintering to show up even better than those wintered outside.

Later.—Since writing the foregoing we have received a number of reports from various sections of the United States. The indications are that the mortality will be very heavy among bees having nothing but honey-dew, wintered in single-walled hives. Honey dew stores in outdoor colonies well packed in winter cases or double-walled hives, in the more northern sections of the country, do not necessarily seem to be fatal. Indeed, the reports from most of our northern States, where the bees were properly put up outdoors or indoors, are fairly good. Some reports go to indicate that there is good and bad wintering in about latitude 35 to 40 and east of the Mississippi River. Where the colonies were fed sugar syrup and the old honey dew was covered up, there appear to be no great losses. But pure honey-dew in single-walled hives, unless the hives are located pretty well south, seems to have disastrous effects.

THE RELATION OF CLOVER TO SNOW.

The large amount of snow that has fallen all over the northern section of the country, and has stayed on the ground almost throughout the entire winter, will mean a luxuriant and heavy growth of clovers this coming summer. The ground has been thoroughly watered, and the plants have been protected as they have not been before in years.

In this connection it is pleasant to remember that, years ago, when we used to have these old-fashioned winters, such as we had this year, we had "old-fashioned honey-flows," that is, there was a flow of clover honey every year; but these open winters seem to have an adverse effect upon the clovers, in that there is a great deal more winter-killing than when the winter is more severe and continued, with snow. Taking it all in all, we are exceedingly hopeful of the outlook for the coming summer.

ADULTERATORS BEING BROUGHT TO TIME.

THE Department of Agriculture, Washington, D. C., is bringing some of the adulterators and misbranders of food products and drugs to time. Some of the specific offenses are as follows: Misbranding strawberry extract, adulteration of lemon extract, misbranding drug preparations, adulteration and misbranding of vanilla and lemon extract, selling of rotten peaches, misbranding of liquors misbranding of maple, adulteration of seedless raisins, misbranding of evaporated apples, misbranding of cheese, of baking-

powder, of pepper, and powdered assafoetida.

May the good work go on! There is a great deal more that Uncle Sam ought to do, could do, and would do, if that prince of pure-food exponents Dr. Harvey W. Wiley, of the Bureau of Chemistry, could have his way. The fact is, he seems to be overruled by his colleagues, who are in the majority.

On the other hand, we have reason to know that there is very little if any misbranding or adulteration of honey. We have traveled over a good portion of this country, and have been keeping, as we believe, in fairly close touch with the great market centers, and we do not hear or know of any adulterated honey of any sort, and we do not believe there is any, a magazine article to the contrary.

PRICE OF HONEY; SOME REASONS WHY IT DOES NOT KEEP PACE WITH THE ADVANCES OF OTHER FOOD PRODUCTS.

THERE is one point that perhaps has not been touched upon by our correspondents in the general discussion that has appeared in our columns during the last two or three issues. Say what we may, the fact is that the price of *all* sugars, syrups, and sweets in general have maintained about the same level for years back. The price of honey is dependent *somewhat* upon the price of other sweets, like maple syrup, granulated sugar, brown sugar, and New Orleans molasses. The facts are, for the last ten years there has been very little fluctuation in the price of these commodities. The probabilities are that, if there had not been a general advance in general food stuffs, the price of sugar and the different grades of molasses would have decreased.* So long as a standard table article like maple molasses, one of the finest products that was ever sold, remains stationary, extracted honey can not go much above its present figures, for the dear public will not pay too high a price for mere flavor, or at least until it is educated to the fact that honey is a predigested sweet, more easily assimilated than the ordinary cane sugars and syrups on the market. We do not mention the different classes of glucose or the so-called corn syrups, as we do not for a moment consider them in our class.

Maple syrup is an article produced only in very limited areas in the United States—one section in Northern Ohio, another in Michigan, and still another in Vermont. There are a few other places where limited quantities are produced; but the three first mentioned produce the great bulk of the maple syrup that is made in this country. This means that the genuine maple syrup, a boiled-down sap of maple trees, has a very limited production. The amount annually turned out is very small in comparison to the annual production of extracted honey alone, to say nothing of that produced in the comb. Yet notwithstanding that, and the further

* Its production has increased faster in proportion than the population.

fact that it is the finest table syrup, outside of honey, that was ever produced, it has been selling for the last twenty years or more at the old regulation price of \$1 00 a gallon, and is still selling at that price. Sometimes it reaches the figure of \$.25, but this is very rare. The price soon gravitates down to \$1 00 and stays there.

This is more remarkable when we consider the fact that the national pure-food law has practically stopped the selling of all adulterated syrups bearing the name maple syrup. This means that the competition of the adulterated goods has been eliminated except for that syrup bearing the name of "mapleine," which seems to be a legitimate product—a cane syrup flavored from an extract from maple wood. In spite of the limited production of maple syrup, and the fact that it has almost no competitor in the field except honey, it is remarkable that the price hovers around the dollar mark year in and year out, notwithstanding all staple articles of food, outside of sugars, have advanced in price. Unless there should be a marked advance in the price of the general sugars, and that does not seem probable, in view of the vastly increased production, we probably can not expect any very marked increase in the price of ordinary extracted, although there will be some increase, especially among the finer grades of comb honey.

OHIO FOUL-BROOD LEGISLATION.

PROBABLY before this journal is in the hands of the reader an effective State-wide foul-brood bill having the general features of the model law recommended by Dr. E. F. Phillips, of the Bureau of Entomology, will be before the legislature. Senator Paerson will introduce the bill.

Ohio has had for a number of years a foul-brood law, but it is based on what is known as the county plan; and, as we have before explained in these columns, it is a dead letter. The county plan of fighting foul brood has always been a failure except where the counties are very large, as they are in some of the Western States.

This bill has the sanction and support of the Ohio State Bee-keepers' Association; the Southwestern and Hamilton Co. Bee-keepers' Association; Secretary Sandes, of the Ohio State Board of Agriculture; State Entomologist Shaw, of the Department of Agriculture, and all the bee-keepers of the State. This law calls for no appropriation, because the Department of Agriculture will assume the expense if we will only give it police authority to carry its provisions into execution. The following is the text of the bill that is to be introduced within a few days.

AN ACT

To establish a Division of Apiary Inspection in the Ohio Department of Agriculture, and to repeal certain sections herein named.

SECTION 1. The Ohio State Board of Agriculture is hereby authorized to establish a Division of Apiary Inspection in the Ohio Department of Agriculture, and to appoint a competent entomologist as the chief inspector of said division, and the necessary assist-

ants, who shall, under the direction of the board, have charge of the inspection of apiaries as hereinafter provided; he may investigate, or cause to be investigated, apiaries as herein after provided; he may investigate, or cause to be investigated, outbreaks of bee diseases, and cause suitable measures to be taken for their eradication or control.

SEC. 2. The inspector or his assistants shall, when notified in writing by the owner of an apiary, or by any three disinterested tax-payers, examine all reported apiaries, and all others in the same locality not reported, and ascertain whether or not the diseases known as American foul brood or European foul brood, or any other disease which is infectious or contagious in its nature, and injurious to honey-bees in their egg, larval, pupal, or adult stages, exists in such apiaries; and if satisfied of the existence of any such diseases he shall give the owners or care-takers of such diseased apiaries full instructions how to treat such cases as, in the inspector's judgment, seem best.

SEC. 3. The inspector or his assistant shall visit all diseased apiaries a second time after ten days, and, if need be, burn all colonies of bees that he may find not cured of such disease, and all honey and appliances which would spread disease, without recompense to the owner, lessee, or agent thereof.

SEC. 4. If the owner of an apiary, honey, or appliances, wherein disease exists, shall sell, barter, or give away, or move without the consent of the inspector, any diseased bees (be they queens or workers), colonies, honey, or appliances, or expose other bees to the danger of such disease, said owner shall, on conviction thereof, be fined not less than fifty dollars nor more than one hundred dollars, or imprisoned not less than one month nor more than two months, or both.

SEC. 5. For the enforcement of the provisions of this act the State Inspector of Apiaries or his duly authorized assistants shall have access, ingress, and egress to all apiaries or places where bees are kept; and any person or persons who shall resist, impede, or hinder in any way the inspector of apiaries in the discharge of his duties under the provisions of this act shall, on conviction thereof, be fined not less than fifty dollars nor more than one hundred dollars, or imprisoned not less than one month, nor more than two months, or both.

SEC. 6. After inspecting infected hives or fixtures, or handling diseased bees, the inspector or his assistant shall, before leaving the premises, or proceeding to any other apiary, thoroughly disinfect any portion of his own person and clothing, and any tools or appliances used by him, which have come in contact with infected material, and shall see that any assistant or assistants with him have likewise thoroughly disinfected their persons and clothing and any tools and implements used by them.

SEC. 7. It shall be the duty of any person in the State of Ohio, who is engaged in the rearing of queen-bees for sale, to use honey in the making of candy for use in mailing-cage which has been boiled for at least thirty minutes. Any such person engaged in the rearing of queen-bees shall have his queen-rearing apiary or apiaries inspected at least twice each summer season; and on the discovery of the existence of any disease which is infectious or contagious in its nature, and injurious to bees in their egg, larval, pupal, or adult stages, said person shall at once cease to ship queen-bees from such diseased apiary until the inspector of apiaries shall declare the said apiary free from all disease. Any person engaged in the rearing of queens who violates the provisions of this section, shall, on conviction thereof, be fined not less than one hundred dollars nor more than two hundred dollars.

SEC. 8. The Ohio State Board of Agriculture shall make an annual report to the Governor of the State concerning the operations of the Division of Apiary Inspection, which shall give the number of apiaries inspected, the number of colonies treated and destroyed by the direction of the Chief Inspector, and such other information as may be deemed necessary.

SEC. 9. Sections 5853, 5854, 5855, 5856, 5857, 5858, 5859, 13368, 5860, 5861, 5862, 5863, and 5670 of the General Code of Ohio are hereby repealed.

It is very important that every bee-keeper write his Representative and Senator at once, urging their support. If you do not know who they are, inquire of your postmaster, the editor of your local paper, or of some lawyer. If possible, get a response from both, signifying their support.

STRAY STRAWS

BY DR. C. C. MILLER, MARENGO, ILL.

THE MAN who owns a piece of land does not own the nectar on it. Prof. Cook first made that assertion, and I defy any one to contradict it successfully.

F. GREINER, page 107, tells how to make a Miller feeder so that the bees can entirely empty it. Here's another way: Instead of having it in two compartments, make it in one large compartment (as most of mine are made), the bees going up each side. No matter how crooked the hives stand, the bees can get the last drop.

ALIN CAILLAS, *L'Apiculteur*, 97, thinks the discovery that infinitesimal quantities of radium are found in some honeys, not in all, may have much importance medicinally. Not only may it affect lupus and cancer, but the enfeebled, the neurasthenic, and convalescents may feel its benefits. If manufactured radium has proven valuable, he asks whether it may not be more so when taken in its natural state.

LUTHER HACKLEMAN thinks bees are not the heartless creatures they are supposed to be. He watched a worker carrying out a wounded comrade. She dropped with her burden near the hive; but, instead of leaving it heartlessly to its fate, she first *fed it*, and then flew off, as if saying, "Good by, God bless you!" [If she fed it, did not such feeding prolong the misery of the bee that must necessarily starve to death?—ED.]

ADRIAN GETAZ has my hearty thanks for telling me what crazy work I did in changing from square kilometers to our square miles. That Straw, p. 68, should say that in the German Empire the average is 2.86 colonies to the square mile, ranging from 1.43 to 6.56; and with apiaries three miles apart the average apiary would have 25.74 colonies, and in the most densely occupied regions there would be 59 colonies to the apiary. A smaller hat would now fit me!

COMB HONEY, in this locality, doesn't need the heat and even temperature mentioned for alfalfa, page 135. Sections piled near the furnace stood through the winter of 1908 and through this winter so far without granulation, the temperature ranging from 40 to 80, and the door open a good deal of the time. [Any comb honey kept in a warm place for a time will resist the effect of changing temperature better than comb honey that has not been so treated. White-clover honey is much more proof against candying than alfalfa.—ED.]

MONSIEUR G. MARTINET, chief of the federal establishment of seeds at Lausanne, among the red-clover plants he had under selection noticed two or three kinds that were specially visited by honey-bees. He placed them, with others, under a cage of coarse cloth which contained a hive of bees, excluding bumble-bees and other insects. One kind was especially visited by the bees,

and showed a harvest of seed as great as plants of the same kind in another cage containing bumble-bees, and even greater. It is believed that rigorous genealogical selection will perfect and fix the type, thus producing a pure race of red-clover capable of fertilization by honey-bees. This special variety being a great producer, the hope is to increase the yield of clover, and at the same time the yield of honey. Moreover, there is complaint of a general disappearance of bumble-bees; and with this new variety and plenty of hive-bees, red clover will be a reliable crop.

THANKS, Messrs Taylor, Holtermann, and Whitney, for contributions to the territory problem, page 154 and following. Now can't you three or some one else put your heads together and help me out? Here's my fix: I would like to keep bees; can't do it without pasture; am told I have neither legal nor moral right to any, and would like by some honorable and honest means to have both. Two of you only tangle me up worse than ever by flinging questions at me. Bro. Taylor alone considers my need, tells me there is a way to obtain territory for pasture, and says, "There is no other way." Good. That is just the way I'll do, then. So I get "a fee simple" in a tract of land two miles square, which, as he says, I own clear through from heaven above clear down to where I never expect to make a permanent residence, and settle down safe in his assurance that no one can dispossess me of the right to keep bees there without my consent. But soon I am disillusioned, for from the apiaries on all sides come streaming bees of other men that promptly "dispossess" me of the nectar on my land, and I have no redress. And now I see the lawyer's trick. R. L. Taylor, I asked for the right to *pasture*, and, in reply, you tell me I can have the right "to keep bees," a right that I had before, and that every one now has who commands a few feet of land. It seems that bee pasture is free to all, just like that Montana cow-pasture Bro. Taylor tells about, and just like much of the cow-pasture in Illinois when I first came here. But that wasn't the best way for the general good, and so Uncle Sam parceled out the land to individual owners. Now, here's the bee-pasture, exactly parallel to the case of the cow-pasture—free to all, with no sole owners. Why can't Uncle Sam do with the bee-pasture just as he did with the cow-pasture? He would thus make a little out of it for himself, make keeping bees as reliable as keeping cows, and do a good thing for the country in general. [The control of bee-territory is an old mooted question. Notwithstanding it has been ably discussed in our back volumes and in late issues of this journal by able men, it seems no nearer solution than it was twenty years. When lawyers and doctors disagree, who shall decide? Unless there shall be some very good reason, we would prefer to have the discussion drawn to a close for the present, especially as the "last say" is so short. *Requiescat in pace.*—ED.]

SIFTINGS.

BY J. E. CRANE, MIDDLEBURY, VT.

I do not quite like Carey Rees' method, p. 767, Dec. 15, of locating hives; for the more compact we can place them, the less traveling we have to do. Besides, what is gained in having the house in the exact center if one has to carry all the honey to one side when moved away?

On page 730, Dec. 1, I believe Mr. Hand has the better of the argument with Mr. Greiner on the use of full sheets of foundation in sections. We bee keepers know that honey in comb built entirely by the bees is preferable to that built on ordinary thin foundation. We also know that it is much more profitable to use full sheets of foundation; and until dealers and consumers are willing to pay us the difference we shall continue to use the full sheets.

The origin of honey-dew, by D. M. MacDonald, taken from the *British Bee Journal*, page 764, Dec. 15, is of great interest at this time. While it may be true that plants do exude a sweet fluid that bees gather, I believe the great bulk of dew, so called, is an insect product, much inferior to that gathered from the flowers by the bees. The practical question seems to be the best use to make of such sweet. He names various uses, to which I would add that of printer's ink, as I understand a large amount of low-grade honey is used for this purpose. He suggests using it for spring feeding, which is, perhaps, the best suggestion of all, although I can not agree with him that it is as good as the very best grade of honey in the market for turning into bees; yet I know it will answer a very good purpose, for I have used many hundred or thousands of pounds in this way.

I can not agree with Mr. Tricky, of Nevada, page 723, Dec. 1, in what he says regarding the use of plain sections. We have used plain sections for many years without trouble. It may make some difference, however, from the fact that we use cartons on all our sections.

We notice that Mr. Tricky has very pronounced opinions as to the paper case being too weak to stand up with its load in carload shipments. I am not surprised that he should feel this way, or that such should be his first impression, for at first I felt the same. For years I thought of this material as being very desirable for a shipping case, but could not make myself believe that a paper case could be made that would stand packing in a car and carry the load of honey safely. Therefore I placed the corrugated partitions at first inside of a wooden case to make it strong enough, and after months of study I made up my mind that paper cases were theoretically strong enough, and so I had some 500 cases made. Yet it was with a good deal of

fear that I shipped my first honey in this way; but after four seasons' trial I have no fault to find with them, and dealers are still paying us more for honey packed in the paper cases than in the wooden ones. [See editorial elsewhere.—Ed.]

Automobiles for bee keepers, page 557, are of considerable importance to those running outyards. For instance, we have six outyards that we expect to visit once in six or eight days, and spend a day at each yard. To go to all these yards and back makes a total distance of 90 miles; traveling with a horse at five miles an hour would take 18 hours, but in practice a good deal more than that, for many of the roads are quite hilly. An automobile would travel the whole distance in less than half the time, so that we could take care of another yard, or give those we already have much better care than they now get. We have not yet purchased a car, but have in mind a trucking car called "The Rapid" that will travel 10 to 18 miles an hour, and carry 1500 to 2000 lbs. load. It is used, I believe, more largely in the East for heavy work than any other, and perhaps all others together. It is manufactured by the Rapid Motor Vehicle Co., Pontiac, Mich.

On page 727, Dec. 1, Doolittle tells us how to lay out an apiary, and he says that of late he uses four half-bricks for a foundation under his cleated bottom-board. This is all very well so far as it goes, and it may answer the purpose where the colonies are wintered in a cellar and the bricks changed to a new location every season; but when a hive stands in the same place the year round, half-bricks go into the ground very quickly, letting the hives follow. We have found good-sized stones preferable. Some have recommended cement, and I think this might do in many cases. Last spring, in underpinning some for y hives we used slabs of marble six or eight inches wide by one or two feet long and two or three inches thick.

Placing the hives in hexagonal groups is not a bad idea if they are set far enough apart. I located a yard in this way some thirty years ago, but had the hives only six feet apart, and I lost too many queens. Ten feet apart would probably be all right; but the yard takes rather too much room. I like to have the hives in groups, either six, eight, or ten in a group, and then have each group painted a different color.

Mr. Doolittle wisely objects to hives facing the north—an objection which is well taken unless in well-sheltered places. This reminds me that nothing is said about locating the yard in a sheltered place out of the wind. To my mind, this is the most important point of all, especially when the colonies are wintered out of doors. Never locate a yard of bees where it is necessary to place stones on the covers to keep them from blowing off. Also never locate the hives where the snow drifts badly. We have two yards in such places, but we intend to move them soon.

BEE-KEEPING IN THE SOUTHWEST

BY LOUIS SCHOLL, NEW BRAUNFELS, TEX.

Dr. Miller, that old comb with the $\frac{1}{2}$ -inch midrib produced dwarf worker bees, and this means that that particular comb had become unprofitable on account of age. This is my point. You are changing points by trying to get me to space the combs further apart—something which the bees can not do.



Plenty of good rains and lots of cold weather, with the ground covered with snow for a few days this winter, have made the prospects in most parts of Texas the best we have had for many years. It is reported that the prospects are not so favorable in Southwest Texas, where the bulk of the honey is produced.



OLD TEXAS VETERAN.

It was my good pleasure last summer to meet one of the oldest, if not *the* oldest, bee-keepers in Texas—Mr. M. S. Klum, of Jacksboro. He came to Texas in 1869, soon after becoming the possessor of bees, and since that time he has kept from 25 to 90 colonies. It has been interesting to hear Mr. Klum relate some of his early bee-keeping experiences. He told in detail about the beginning of GLEANINGS; how he obtained the first four numbers through a special subscription privilege given by Mr. A. I. Root; and how certain changes were made, first to a monthly and then to a semi-monthly. Through all the years he has been a subscriber to GLEANINGS, and he recently sent all the volumes to me except some of the very earliest, which had been destroyed during a fire, and I have added them to my library. Mr. Klum is one of the charter members of the first Texas bee keepers' association, which was organized in 1877 at McKinney, in Northern Texas, and is the only survivor. While he still has bees and takes a great interest in them, he is not able to give them the care that he formerly did. I honor these aged men to whom we owe so much. They went over the rough trails before us and made our paths smooth.



CORRUGATED-PAPER SHIPPING-CASES.

We regret to say that these paper cases did not prove very successful in a trial shipment which we made a short time ago. Eighteen cases of section honey were sent by express from a point in Western Texas to W. H. Laws, at Dallas. Of the eighteen cases, two were of corrugated paper, while sixteen were regular glass-front wooden cases. The paper cases were properly marked, but the wooden cases were not, for the glass fronts showed the contents. At first thought, one would suppose, after examining the two different kinds, that the corrugated-paper cases would be far ahead

of the old style; but the reverse proved to be the case in this shipment. Of the sixteen old-style cases of sections there were hardly enough broken ones to fill one case; but in the paper cases the sections were not only all broken, but they were smashed and even the cases themselves were badly crushed. They were in such bad shape that we did not even open them to remove the contents, as all was a total loss. The paper was soaked with honey. An examination of the few broken sections in the other cases showed that most of the combs that did not stand the shipment were not well attached to the wood of the sections.

It is not our intention here to denounce paper shipping-cases; but from the result of this experience we should like to warn others to try only a few of them before investing too deeply. We know that we would regret it if we lost a fine crop of comb honey on account of improper carriers. It is possible that the above is an exceptional case; but it is well to err on the safe side. We also give this experience for the benefit of the advocates of this case so they may be enabled to make further improvements if necessary. [See editorial.—ED.]



THAT CHUNK-HONEY EDITORIAL.

That abstract from Mr. Cady's article and the comments made by the editor, p. 33, would make it appear that we Southerners did not understand the situation regarding bulk comb honey in the North as compared with that in the South. It might be well to explain, however, that we are well aware that the North is not at all ready to take to such honey in any great amount; that the people will have to be educated to it first, and that even the bee-keepers will have to educate themselves in the matter as to the best methods to adopt in its production, its care, and putting up for the market, and, finally, the best ways of marketing. We understand all this, perhaps better than the bee-keepers, and the consumers of the North understand our position. We know that it will take time to introduce such an article in the North—that it can not be put off on the public in a wholesale manner right at the very start, without playing sad havoc in the future sales of the article. This was the entire trouble with Mr. Cady's experiment. Instead of letting a "silver-tongued hustler" put off on the inexperienced public in glorifying terms an article that was new, and that was not understood, it would have been much better to introduce it in a small way at first, letting it find a market of its own slowly, which would finally have reached great proportions, perhaps. If not, then the bee keeper is not out much for the small investment in giving it a fair trial. The case referred to is only one of hundreds that have failed because a new thing was lauded beyond the expectations of the buyer. It teaches us a valuable lesson, however, that we should go slow at first when trying new things.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

DO OUT-APIARIES PAY?

"My bees have increased till I have more than I think it profitable to keep in one place, and I came to have a little talk with you about moving a part of these colonies to a place four miles away, where I think the location fully as good as it is where I am. Do you think such a course would pay me?"

"How many colonies have you now, Mr. Morgan?"

"I have 300; and I thought if I could move 100 of them to the place I spoke of it might be better to do so. I must either do this, be overstocked, or sell a part of my bees. At least that is the way I look at it."

"Well, you should know your location better than any one else. Mr. Alexander kept 700 colonies at one place, and did not think his locality overstocked. There are possibly some few localities where 500 to 700 colonies could be kept with a profit, and there are others where 100 colonies would be too many to make a success. For myself, I should consider from 100 to 200 colonies as many as it would be profitable to keep in the average apiary; and if I wanted to keep more I would rather start an out-apiary than to sell all the bees I had above that number."

"That is just what I had hoped you would tell me. Now, how many colonies would you use for an out-apiary?"

"Fifty colonies would make a good start until you could be sure that more would do as well. But this would depend somewhat on how near your own or other bees the apiary was to be established. Of course, if you could go seven or eight miles from any other bees, the out-apiary should do as well as your home yard provided the pasturage were the same. But as a rule I should think 100 colonies would be as many as would be profitable, especially if the out apiary is located within four miles of the home yard."

"Then, according to what you say, I could divide the 100 which I do not think best to keep at home, and start two out apiaries; and if I found that each yard of 50 did well, increase them to 100 later on."

"That would be my way of doing it."

"Then that is what I will do as there is a place four miles in a direction opposite my home, which, so far as I know, is as good as the other. But don't you think I had better have some one to look after swarms during the summer months?"

"If you are to increase your bees by natural swarming, this will be necessary; but if you work them as given in 'A Year's Work in an Out apiary' you should not have swarms enough to pay for the keep of any one. I have not had anybody to look after the bees in the out apiary for more than ten years; and so far as I know, only two swarms have gone off in all that time. One colony became strong in apple bloom before I put on the up-

per hives, then swarmed; and the swarm got away, as the queen in this case was unclipped, and there was no one to give it a home. Then I had another case where a colony had swarmed several times before I was ready to shake for the first time; and after shaking they built queen-cells and swarmed, without trying for any worker brood. This they kept up, evidently, till I went for the second or final shaking for the year, when they swarmed while I was there, thus telling their secret. However, this was evidently a case of supercedure, as the queen did not lay to the amount of two frames of brood at a time."

"But if I stop all swarming, how shall I increase?"

"When you get home, turn to Chap. V. in the out-apiary book, and that will tell you how you can make all the colonies you may desire, and that, too, with little or no cost to you in honey."

"Then, should I wish to continue out-apiaries still further than the two, I could make all the colonies I wish by what is given in Chap. V., and not depend on natural swarming at all."

"Certainly. The day of natural swarming for increase has gone by, so to speak; for if I am right, few of our most practical apiarists allow little if any swarming, whether at home or in the out-apiary."

"Well, should I conclude in the future to run several out-apiaries how would you locate them?"

"The amount of pasturage should be the first thing to consult. Next is the most convenient way to reach these out-apiaries. If you are to use horses or the automobile as a means of conveyance I would locate an apiary from five to seven miles from my home, as near the four points of the compass as possible, if the location would permit of my doing this; and a fifth one in some good location five miles away from any of these four. I would have five out-apiaries if I could possibly do the work, and in this way I could attend to an apiary each working day of the week, including the one at home."

"When the home yard is located near a trolley line it would be the greatest of fun to locate apiaries at the best locations along this line for in this way they could be reached at any half-hour. How much should I pay as rent for the ground?"

"There can be no set price for this. In one case I knew of, the man having a fruit-farm, he welcomed the bees without making any charge, considering that he was indebted to the apiarist for the good the bees did as fertilizers of the blossoms of his orchards. Most men, however, want from \$5.00 to \$10.00 a year. And now may I let you into a little secret? Whatever the price agreed upon, when the end of each honey season arrives, make the person whose land you occupy a present of from twenty to thirty pounds of nice honey; and if your experience proves like that of mine you will have a fast friend for all time, with no complaint of the bees being a nuisance, even should they be somewhat troublesome at times."

GENERAL CORRESPONDENCE

THE SOURCE OF HONEY-DEW.

D. M. Macdonald's Opinions Disputed.

BY DR. C. GORDON HEWITT,
Dominion Entomologist.

[This article by Dr. Hewitt, and the one which follows it, by Dr. E. F. Phillips, were received by us at practically the same time. Both writers agree very well in regard to the source of honey-dew, and, coming from such authorities, we feel quite sure that these opinions, together with that from Prof. H. A. Surface, may be taken as the final answer to the question, viz., that most of our honey-dew is an excretion from the aphides.—ED.]

I have read with interest the recent communications in GLEANINGS on the above subject which appears to have been stimulated by the remarks of Prof. H. A. Surface in your issue of October 15, p. 623. In your issue of December 15, p. 763, an article by Mr. D. M. Macdonald, in the *British Bee Journal*, was published which tended to disprove the views of Prof. Surface; and in the last issue of your journal which I have just received, Feb. 1, p. 89, Mr. J. L. Byer expresses the pleasure that he will feel should Mr. Macdonald's view be established—namely, that honey-dew is not an excretion.

It is a matter of regret that there should be any doubt in the minds of your readers as to the nature and source of the honey dew in aphides, as this has been established as a scientific fact for many years; and it is on this account, and in order to set the matter at rest in the minds of those who may not have the advantage of being acquainted with the scientific literature on the subject, that I am taking this opportunity of placing the true facts before your readers.

Some writers have believed that the sugary matter called "honey-dew" was produced (I will refer to the use of the two terms "secreted" and "excreted" later) by the pair of peculiar tubes or siphons which exist in certain sub-families of the aphides; but it has been proved by many authorities that this view is erroneous. It has been shown that honey-dew is a product of the alimentary or digestive tract, and escapes by way of the anus, or vent. Certain species of aphides produce large quantities of honey-dew which is so prized by ants and certain other insects, including bees.

In the early half of the 18th century the famous entomologist Réaumur expressed the view that honey-dew does not issue from the siphons but from the anus; and, later, Kaltenbach supported the idea. Forel states definitely that the siphons do not secrete a sweet fluid but a gluey wax which is not sought by the ants; the sugary matter which they lick up is rather an excretory product of the digestive tract.

In 1891 Busg n observed a single individual produce 48 drops, each drop being about 1 mm. (i. e., $\frac{1}{16}$ of an inch) in diameter in 24

hours (p. 193, *Biologisches Centralblatt*, vol. 9). The production of this honey dew is also affected by the temperature; and Brandes (*Die Blattlaus und der Honigbau*, in *Zeitschr. f r Naturwiss.*, vol. 66, pp. 98—103, 1894) found that the greatest activity was in the middle of the day. The fact of the effect of temperature on the production of honey-dew by the aphides is taken advantage of by certain species of ants which keep the aphides warm by erecting small tents or shelters over them which may be compared to cow-sheds.

In the article of Mr. Macdonald's, to which reference has been made, he says, p. 764, "It, like the honey-bee, has something in the nature of a honey-sac, quite separate from its ordinary stomach, and from which, when the sac gets overcharged, it regurgitates or rejects aphidian honey by means of two tubes used for no other purpose." Although the author of that statement may be an excellent bee-keeper he is not a scientific entomologist, or he would never have made such a statement, which is absolutely inaccurate. The honey-sac of the bee is the fore-stomach, and is part of the digestive tract. The digestive tract of the aphid has no connection with the two tubes or siphons by which it has been wrongly thought the honey-dew is produced. The gluey waxlike substance which appears in drops at the end of these tubes is secreted by a group of small gland cells situated at their bases. Certain aphides, such as the woolly aphid, *Chermes*, etc., do not possess these siphons or tubes, but have, instead, simple pores on the upper side of the body which produce waxlike threads from wax-glands. If Mr. Macdonald will consult a paper by A. J. Grove, on "The Anatomy of *Siphonophora rosarum*, Walker, Part 1, the Apterous Viviparous State," in *Parasitology*, Vol. II., pp. 1—28, 1909, he will find two excellent figures of the alimentary or digestive canal of this rose aphid on page 7, from which he will see that it is a very simple structure.

Honey-dew is an excretory product of the digestive tract of the aphid which is naturally expelled by the usual aperture. It is elaborated in the digestive processes from the very large amount of sap which the aphids suck up by means of their proboscides; and as it can not be made use of by the insects in building up the body tissues and producing young, it is excreted in a changed form as a waste product. I entirely fail to understand why the idea of its being an excretion instead of a secretion should be repellant to any one: it is merely changed cell sap, as also is honey, both of which undergo a change in the digestive tract of the insect. The difference between an excretion and a secretion is really not so great as at first sight appears. The cells of an animal's body produce certain chemical substances according to their nature. The cells of the salivary glands produce by their activity a secretion known as the saliva; the wax-cells of the aphid and of the bee produce a wax secretion. Many of the cells of

the body extract waste substances from such of the body fluids as the blood, etc., and in turn excrete these substances into the digestive tract or the kidneys, or even, in the case of sweat-glands, on the skin of the animal. Both secretions and excretions may be the results of cell activity. Of course, the term excretion is frequently used to indicate waste products which have never gone through the cells but have passed through the alimentary canal in an unaffected state; that is not, however, cellular excretion.

I may add that, by observation, dissection, and microscopical examination these facts concerning the origin of honey-dew and the nature of the siphons or holes which were supposed to secrete the same have been confirmed by me.

Ottawa, Canada.

THE SOURCE OF HONEY-DEW.

Most of It is in the Nature of an Excretion.

BY DR. E. F. PHILLIPS,

In charge of Apiculture, Bureau of Entomology, Washington, D. C.

The article on p. 763, Dec. 15, by the distinguished Scotch bee-keeper D. M. Macdonald, seems to call for further discussion of this subject. The past season has been a most remarkable one in bee-keeping on account of the excessive amount of honey-dew gathered by the bees, and equally remarkable by the scarcity of honey. The result is that most bee-keepers have on hand a quantity of honey-dew honey. Under such circumstances it is but natural that we should desire to have as good an opinion of the product as possible, for we want to eat it, and we desire also to be able to sell it under a good name. There are a few bee-keepers, however, who do not want the exact truth about the matter, even if it is not what their wishes might dictate.

Honey-dew is a general term, including sweet substances from several sources. There are many plants which have nectaries outside the flower which secrete honey-dew, which is gathered by bees. Among these may be mentioned the hau, of Hawaii (see Bulletin 75, Part V. of the Bureau of Entomology); cotton, some of the acacias, and conifers. It is a mistake, however, to assume, as Mr. Macdonald does, that this is a characteristic of the majority of plants from which honey dew is gathered, for the greater proportion of honey-dew is not a plant secretion but an insect product.

Insect honey-dew is produced by various hemiptera, among which may be mentioned scale insects, aphids, and leaf-hoppers. The production of enormous quantities of honey-dew by a leaf-hopper in Hawaii is discussed in the bulletin referred to above. The insect honey-dew with which we have had to contend during the past season is derived from scale insects and aphids, and only observation can decide whether this is an excretion or a secretion from certain glands.

First of all, it can be stated that Mr. Mac-

donald is mistaken when he states that the plants secrete a sweet liquid on which the aphids come to feed. These insects, and scale insects also, feed only from the inside of the plant through sucking mouth parts. It is not necessary to offer proof on this point so well known to all entomologists. The only question to be considered is whether the sweet substance given off by these insects is an excretion from the anus, or whether it comes from certain glands through nectaries. The popular belief has long been that it is derived from the nectaries, and popular science furnishes beautiful tales of the "milking" of aphids by ants. Such writings are not always infallible.

Probably a large proportion of the honey-dew gathered by the bees this past season was derived from scale insects *which have no nectaries*. The honey-dew from this source is a pure excretion.

That the honey-dew of aphids is an excretion and not a secretion can readily be proven by any one interested enough to spend a few hours watching a group of these interesting insects. Drops of honey-dew will be seen to appear at the anal end of the insects, and then to drop as if forced from the body. This fact was noted as far back as 1800, and since that time has been observed and recorded by various entomologists. Another interesting test will be to secure one of the insects, holding it by the head between the thumb and finger and gently pinching it. Usually, if the insect is well fed a drop of clear sticky honey-dew will be forced out from the body at the anal opening; and if pinched hard the body juices will be forced out here, and also out through the nectaries.

Some groups among these insects will be with long prominent nectaries, and others will be found without nectaries or nectary pores.

The first group *secretes* or *excretes* from the nectaries a very small amount of a white liquid which is by many supposed to be the honey-dew of aphids. Even if honey-dew comes from the nectaries it is an excretion, or the casting-off of the waste products of metabolism for the liquid so ejected is not of use to the animal in any of its functions. Prof. C. P. Gillette, Canadian Entomologist for 1907, p. 236, states that "Neither he nor his helpers who have been observing the *Aphidæ* rather carefully for a few years past have ever found honey-dew issuing from the cornicles."

Among the second group (having no nectaries or nectary pores) some species live in galls formed on leaves; and often a gall, when fully developed, will be half filled with this excretion, and the aphids are probably saved from drowning only by the waxy secretion which is secreted by glands along the dorsal surface of the body. The fact that the species of this group do not have nectaries or even nectary pores, and yet excrete a large amount of honey-dew, is clear evidence that among them the honey-dew is excreted through the anal opening.

As the aphids usually feed on the under

side of the leaves, and when present in numbers excrete a large amount of honey-dew, naturally the honey-dew falls on to the leaves lower down, which are soon covered with a sticky substance.

All observations up to the present time indicate that the honey-dew of aphids is an excretion passed through the digestive organs of the body, and is a residue of the juices sucked from the various food plants for the purpose of food.

That smut grows on honey-dew can not be contradicted, and possibly Mr. Macdonald is correct in attributing the dark color of honey-dew honey to such a cause. He is not correct, however, in his assertions that honey-dew is largely a plant secretion and in part a secretion from the nectaries of aphids.

FEEDING POLLEN SUBSTITUTES IN EARLY SPRING.

Is it Desirable? an Interesting Series of Experiments.

BY SAMUEL SIMMINS.

This subject was brought forward in GLEANINGS during 1909, and some of those who have found an occasional deficiency of natural pollen in the early season gave their experiences in supplying substitutes. Over a course of many years I have given this subject much thought and careful experiment. A common practice in Great Britain is that of dusting pea flour on to pine shavings placed in a box, or in an inverted hive arranged in some sheltered sunny corner as soon as springlike weather is in evidence, when a merry hum and happy industry gladden the heart of the enthusiastic if not too observant bee-keeper.

Very few owners have so far realized that this practice is fraught with danger, especially when, during many days in succession, the bees are able to work at this artificial food. They dwindle rapidly because of this unnecessary and ceaseless labor, just at the time their strength should be conserved to the utmost. The process entails excessive water-carrying at the same time, and unusual excitement generally; hence for my own part I am obliged to condemn this apparently innocent method of supplying that which really is not needed at all by many of the colonies in apiaries where the process is adopted.

The pea flour alluded to is very finely ground and cooked, and is known here as *syming oris*, an article prepared for thickening soups, and of all substitutes is that most sought after by the bees until natural pollen is available.

USED IN THE FORM OF PASTE.

I have mixed it with honey as a stiff paste, and then pressed it into the cells, filling about one-fourth of one side of a comb, and placing that side next the outer patch of brood, if any, or within the margin of the cluster if no brood may be started. A brood-nest would

be then developed; but under no possible circumstances will the bees extend the brood area to such dimensions as they do under the genial stimulus of a natural incoming of the pollen of flowers; and this is just where they do not appear to recuperate sufficiently for the trouble and waste of energy incurred. I may suggest that, if mixed with sugar syrup, the paste becomes so hard as to be quite useless.

DUSTING FLOUR INTO THE CELLS.

Another method I have many times adopted has been that of shaking the dry flour into the cells from a tin box or can having a number of $\frac{1}{8}$ -inch holes punched through the lid. A somewhat cleaner plan I have also used has been that of placing about half a pint at a time in a warm dummy feeder having a receptacle that holds only that quantity, and really constructed as a syrup feeder.

THE WARM DUMMY FEEDER.

By the way, these small dummy feeders, fitting close at each end to the hive sides, and of the depth of the frames, can be used in cool weather, if necessary; and I may say they are the only kind I have found to overcome the objection bees have to taking syrup from feeders when somewhat cold in the early season. You see, this narrow dummy, being placed close to the cluster, the food always remains at nearly the same temperature as the bee-nest, and is readily appropriate. For the same reason, when filled with artificial pollen the workers crowd into the pollen; and this compact working cluster, with the temperature raised in consequence, is an additional stimulus to collection of the nitrogenous food. While the bee working in the open appears compelled to take wing while padding the pollen in place on its legs, the process is not thus carried out in the dark while the bees remain in the feeder, and the food is carried to the cells forthwith; though in some cases I believe it possible the workers prepare the bee-pap straight from the feeder.

One can, therefore, see how it is possible, for early stimulation, to place one of these warm dummy feeders on each side of the cluster—one with several weeks' supply of pollen, and the other for a periodical fillip of syrup. In this case the spring-fed syrup is used thinner than autumn feed, so the bees are not compelled to carry water. The process may be valuable in some climates, and probably often to the queen-rearer, but it is no use looking at these apparently helpful matters without fully considering

THE OTHER SIDE OF THE QUESTION.

Like many other queen-rearers I always have a lot of nuclei to unite in autumn, and the colonies thus established seldom have much stored pollen for early spring use. It is well known that colonies wintered with pollen-stored combs usually breed just a little nearly all the time from the new year onward, in those localities where the weather is not unusually cold, though it may be but one little patch at the heart of the cluster,

and hence this condition is supposed to give such bees a great advantage by the time free flights occur.

The bee keeper finding his colonies absolutely without pollen (though I believe this is a rare occurrence with permanent colonies properly managed) begins to turn things over in his mind, and thinks his bees will be all backward if he does not supply the deficiency. I have done this many a time, and yet often have I declared I would never do it again. But the advent of a backward season, and no natural pollen available, together, perhaps, with a personally restless experimental turn of mind, I have "gone and done it again," hoping that possibly some new adaptation might at last bring the desired result.

In the first place, I would say that a pollen substitute placed in the cells, either dry or in the form of paste, is not all used by the bees, though a great deal is shifted and packed in their cells like natural pollen. When the latter comes in freely there is found the remnant of the stale stuff which the bees do not seem willing to clear out until the genuine honey business is in full swing, and then they have to pare the cells down to the mid-rib before it can be disposed of. There is also considerable waste of the same material corroding the floor, but that is not the end of the subject. It should be understood that, no matter how fine may be the meal given by the owner, whether it be sieved or "dressed" free from all shucks, the bees appear to select only the cream, and a great deal of dross is to be noticed after they have worked it over.

But the real question at issue is whether the substitute is wanted or not. Certainly the bees can not breed without pollen; but if you do not give it to them they will sit still; and bees that are quiet are not ageing or dwindling to any extent, though at the back of my mind I will confess there is some idea that bees wintered absolutely without pollen have not the same stamina as those that have it; for bees certainly consume nitrogenous food in cold weather, if they have it, while they may not be rearing brood.

While the substitute starts them to breeding when fed in early spring, I have always noticed it has not been to the same extent that the natural supply will do, and this is probably why this artificial feeding seems to reduce their vitality ultimately, there not being sufficient compensation for the wear and tear induced.

Certainly I prefer stocks wintered with natural pollen; but when in future I have to carry any through without it I have decided not to give them any substitute, though doubtless I shall shift pollen-stored combs around in due season if any are available.

WHITE OF EGG AS A SUBSTITUTE.

Some of your German readers may remember that, many years ago, one of their countrymen claimed to have carried out some very successful experiments (in Germany) by feeding the white of eggs while building up his stocks. I am sorry I have mislaid the paper referring to this matter, so that I can not

now give the exact method. It was probably beaten or whisked into a froth, and mixed with honey. I should imagine sugar syrup would be unsuitable, as the mixture would tend to harden.

EXCHANGING COMBS.

So many bee-keepers worry over pollen-clogged combs that, if it were not for the danger from foul brood, a good business might be done in exchanging pollenless for such overcharged combs. The latter would be invaluable to the apiarist who has no pollen in the early season; and if he had to buy such combs they would be cheap at a dollar apiece if in good condition.

Heathfield, Eng., Jan. 24.

[Mr. Simmins in times past has done a large amount of experimental work, and in the matter of giving artificial pollen it would seem as if he had gone over the whole ground. His conclusions, reached from a different set of experiments, are practically the same as those arrived at by A. I. Root many years ago, and, we may say, by all others who have tried giving artificial pollen. In this connection the reader will be interested in our reply to F. Dundass Todd on page 123 of Feb. 15th issue.—Ed.]

HISTORY OF THE INTRODUCTION OF THE HONEY-BEE INTO THE HAWAIIAN ISLANDS.

BY ALBERT WATERHOUSE,
of the Garden Island Honey Company.

[This is the beginning of a series of articles we have in hand on Hawaiian bee-keeping, furnished by prominent writers at the solicitation of the Hawaiian Agricultural Experiment Station.—Ed.]

About the time gold was discovered in California a society was organized in Hawaii known as the Royal Hawaiian Agricultural Society. At a meeting of this society held in Honolulu on the 14th of August, 1851, the following resolution was passed: "Resolved, That a committee be appointed to procure the honey-bee from Australia, Central America, or Chile, who are authorized to incur the necessary expense. R. C. Janion, chairman, Baron de Thierry, J. Montgomery, were appointed."

As California was still only a mining camp, no bees were to be found there, and the first efforts of the committee were to secure colonies from New Zealand. At the annual meeting of the society in June, 1852, the committee reported a promise of three colonies from New Zealand. I quote the following tribute to the honey bee from the committee's report, written by Baron de Thierry:

The bee, from sipping the sweets of the flowers, takes nothing from their beauty; and if we should benefit the neighbor who has bees whilst we have none, we know that, even in so small a degree, we are contributing to the welfare of our fellow-creatures. The cultivation of flowers promotes domestic happiness, soothes the mind, and richly repays for the trouble bestowed upon them. The wealthiest, accustomed to the glare and glitter of state, are prouder of a fine nosegay than of their massive plate and costly silks; and the mightiest of queens would scarce appear in festive attire without a bouquet in her hand or a rose in her bosom, emblematic of the purity of her mind and homage to the exquisite works of a greater Being above.

But whilst the palace and the cottage, the dwelling of the richest and the poorest, are so eminently improved by these most attractive of nature's vegetable works, the indefatigable bee collects tribute from every flower, and hordes its treasure with equal fidelity for the cotter as for the magnate, adding to the comfort and profit of both by its unceasing industry. The little stranger, perhaps at this moment on her way, will be the means of visiting upon you an important and inexpensive article of export; and in return for such service, and for the additional comfort which families will derive from that healthful article of diet, and the wax which she so abundantly produces, I trust that some exertions will be made to raise flowers for her support.

Although the promise of bees from New Zealand was made, it was never fulfilled. The same year, 1851, the first actual attempt to bring the honey bee to Hawaii was made. A colony was forwarded by sailing vessel from Boston. The details are given in the following report by C. R. Bishop, read at the June meeting of the Royal Hawaiian Agricultural Society in Honolulu, May 26, 1854.

W. CHAMBERLAIN, *Chairman of the Committee on the Honey-bee*—

Dear Sir:—Being one of your committee, and having had within the last year a little experience with the unfortunate colony of these interesting insects upon which you are expected to report, I will give you what information I can relating thereto. I believe that each year since the formation of the Royal Hawaiian Agricultural Society, except the present, there has been offered a premium for the introduction of the honey-bee into these islands. The only persons that I know of who have really been at any expense and trouble to accomplish so desirable an object are Henry A. Pierce, Esq., of Boston, a life member of the society from its foundation, and contributor to its objects in various ways, and Capt. Stearns of the bark Matanzas. In 1851 Mr. Pierce put on board the ship R. B. Forbes one swarm of bees and offered the mate a liberal reward if he would take care of and deliver any of them safely. The hot weather in the South Atlantic melted the honey and drowned all the bees in the hive. In February, 1853, he procured another fine swarm, well stocked with honey, and was at a large expense, some \$140, in having it secured on the deck of the bark Matanzas in such a manner that seemed to insure its safe arrival here. The hive was placed in a strong box, leaving a space of six inches all around for air between the hive and the box; then a packing of ice two feet thick above, below, and on each side; outside of which was a space of six inches filled with charcoal, and all enclosed in a case 8 feet square having two lead pipes 3 inches in diameter running from the outside to the hive to supply the bees with air. Capt. Stearns also purchased a swarm and placed the hive inside a box having wire cloth nailed across openings in the sides, and hung at the end of the boat just forward of the cabin. The bark had a long passage, 150 days, and, being becalmed a number of days in the vicinity of the equator in the Atlantic, a part of the ice melted, and during the rough weather off Cape Horn thumped against the decks so heavily as to jar many of the bees down into the water. After they doubled the Cape, Capt. Stearns had them taken out of the large case and hung up under the boat with the other swarm, where they both appeared to be doing well until they arrived within about ten days of this port, when moths made their appearance in the boxes, and the bees commenced to die rapidly. Capt. Stearns' more than the other. When the bark arrived off Honolulu in August, 1852, I went on board, examined Capt. Stearns' hive, and found large numbers of moths, worms, larvæ, and some dead bees inside, but no live bees. The other hive was in very bad condition, containing swarms of moths, worms, and larvæ among the honey-comb. A few bees were living, and they had plenty of honey, some 15 to 20 pounds, a part of which, in the chamber of the hive, was very handsome. I took the hive to my garden, where, with the kind assistance of Capt. Stearns and others, we removed as many as possible of the moths and cleared the hive of worms, dirt, etc., as well as we could, and afterward removed nearly all the honey. There appeared to be from 40 to 60 bees living, among them the queen. The hive of bees and honey was put up and sold at auction in order to give persons understanding the management of bees, or wishing to have them, an opportunity to purchase. I purchased them, had a new hive made, and tried to induce them to occupy it, without success. After a few

days I thought they seemed to be less active than usual, and upon examination found but three or four bees remaining, and a day or two after, none at all. As there were no dead bees in the hive or on the boards underneath, and no birds about to destroy them, I concluded that they had found some place more to their fancy than the hive, and that I should again see them or hear of them; but I have not, and am unable to account for their disappearance or fate. Capt. Stearns took excellent care of the bees; and had he had a short passage, or even a passage of from 130 to 140 days, would have delivered both swarms in good order which proves that they can be brought from the United States via Cape Horn without any great expense or trouble except to have them secure against any excessive heat and rough handling; but great care should be taken in the beginning to select hives free from moths and their eggs. Had the swarm mentioned arrived here in better condition it probably would have been better to send it immediately to a cool locality on Maui or Kauai in the vicinity of sugar-plantations and banana-fields; but it was too far gone to admit of any delay in removing the destructive enemies of the bees.

We have a great variety of moths and ants in the islands, from which it would require constant care to protect the bees. I have lately learned that honey-bees have been recently introduced into California. By and by we shall probably be able to get them from there more easily than from any other place. The thanks of the society are due to Capt. Stearns and Mr. Pierce, who, in my opinion, should be partly or entirely remunerated for the expenses incurred in trying to supply us with so interesting and useful an addition as the honey-bee.

CHARLES R. BISHOP.

After these failures no further attempts were made to bring the honey-bee to the Hawaiian Islands until after colonies had been successfully established in California. On the 21st of October, 1857, Capt. Lawton, of the ship Fanny Major, landed four hives of bees that had been shipped from San Jose, California. These four colonies, according to Dr. W. D. Alexander, were placed in Dr. Hillebrand's garden in Honolulu, and are reported to have thrived well. Two of these colonies were afterward purchased by the Royal Hawaiian Agricultural Society for \$100 apiece, and the other two colonies were purchased by private parties. These four colonies were the first honey-bees to become established in the Hawaiian Islands, and from them have descended many of the wild swarms to be found in the trees and cliffs of the mountainward regions of the islands.

CUT COMB HONEY.

Should it be Sold for a Low Price? Liquefying Honey by Solar Heat.

BY F. GREINER.

In the foreign bee-journals it has been no uncommon thing to see comb honey advertised "in tin boxes (Blech-Dosen)," so many kilos for so many marks." These advertisements imply that the comb is being cut out of frames, and packed into the tin receptacles (flat boxes). We had been accustomed to look with contempt upon such a slovenly way of marketing comb honey. I flattered myself that we in America were marching at the head of the procession, and that "cutting" comb honey to be marketed was not to be thought of.

From what the editor says on pages 765—767, Dec. 15, it appears that we are falling in line with the brethren across the water, and

the method which we have been inclined to treat with contempt may soon be the popular one. If it is possible and practical, and meeting with favor among the consuming classes, to put up quarter-pound packages of comb honey in paper cartons it will be so with full-pound parcels. Eventually we may put up fifty-cent or even dollar lots in these paper boxes lined with paraffine paper.

Comb honey produced for this purpose is, of course, most profitably raised with shallow supers without separators, or in regular extracting-supers, frames either being filled with very light comb foundation or not, at the bee-keeper's option.

As the editor says, we shall sooner or later be compelled to give up the use of sections on account of the scarcity of suitable timber to make them. If we are prepared for this emergency we shall be the better off. In time of peace is a good time to prepare for war. Paper may help us out. Paper for the honey-containers, paper for shipping-crates! The greatest advantage, however, will be found in providing a super which is most congenial to the bees, one which they will not hesitate to fill. We shall be able to produce very much more honey with the inexpensive outfit, cheapening the product on both ends. There will be honey and money galore for the bee-keeper in the future unless he sees fit to divide the spoils with the consumer.

So far it does not look like cheapening the product to the consumer. Twenty-five cents for $\frac{1}{4}$ pound, or about four times as much per pound as the section honey is sold for in the large cities late years—that is the price named by the editor. I pity the poor consumer, or would-be consumer, of comb honey. May we expect to dispose of our comb honey at such a fabulous price? I do not think so. I think we must even cut the now established price by a good deal if we dare expect to sell such large crops of honey as we shall then produce. At the present price of 15 cents per one-pound section here in the country the sale is limited, and the largest portion of my yearly output has to go to the city. At ten cents per pound I might expect to sell a large portion in my home market. Lower-priced honey is the demand here, although it seems, since labor is paid so much more than formerly, that we as honey-producers ought to be paid better also by receiving better prices.

If cheap honey is demanded, why don't the honey-eating people buy extracted honey? might be asked. The answer is, because by far the larger majority of them do not want extracted honey even at half price. They prefer the most inferior comb honey, such as that from unfinished sections, dark honeys, even honey-dew-flavored honey, to the finest extracted. I do not understand why this is so. I have many times been shocked by hearing the above sentiments from people who, I had every reason to think, had been converted to the extracted honey. Others who had bought my best extracted for years, ceased to be customers for it when

they found that inferior comb honey could be had at about the same price. This state of affairs has been and is very discouraging to me, and there is no wonder that I have been inclined to give the Texas bulk-comb-honey production a trial.

I have hesitated on account of liquid honey granulating here in this climate so readily. I could not believe that people were willing to dig into a sixty-pound-can of solidified honey after the comb.

LIQUEFYING HONEY BY THE HEAT FROM THE SUN.

Mr. Boardman's sterilizing method, see pages 769, 770, 1909, might give some relief. He can undoubtedly tell how long extracted honey must be exposed to the direct rays of the sun to prevent its granulation afterward. As was reported some years ago in *GLASS-AN-INGS*, we have liquefied honey in a solar. When it was assured by Selser and others that bottling honey hot would prevent granulation, we heated honey in half-pound tumblers in our solar and sealed it. We observed no difference between honeys heated on the stove and such as is warmed in the solar; but we did not leave honey in the solar long at any time.

The objection made to the solar machine was that the sun could not be relied upon at all times, and that artificial heat was, therefore, better, particularly so in the fall of the year when granulation occurs. This is true, and for this reason I have used my solar but little of late. When I attempted to liquefy three-pound cans full of hard honey, and I failed to shift the apparatus around with the sun at the end of the day, I found portions in each can still hard, and then I had to leave the cans of honey for another day. The next day, as luck would have it, it would be cloudy or partially so. There were times when the honey in these 3-lb. cans did not warm up in a week. This was disgusting. To liquefy honey in 60 lb. tin cans in this way is out of the question. If I were to build a large solar machine for heating honey I would use artificial heat in connection with the solar.

If found necessary to keep extracted honey in the sunlight for a long time, one will have to build a regular glass storage house and put up the whole crop in glass. This latter is not a very bad practice for one who has a demand for his honey in glass packages. I know of some who follow this plan. They need less tank room, for they draw the honey into their retail packages soon after extracting. When granulated the cans are treated to a hot-water bath, and the honey is thus speedily liquefied. After thus being treated it does not again harden for quite a while. This method may be less expensive than the Boardman sterilizing process. The great advantage a solar machine has is that honey is never overheated. This can not be said of the other plan.

This subject of sterilizing honey is a very interesting one, and many of us want more light on it. We should also like to know why honey granulates sooner when often handled. If a chemical change has been effected

by sterilizing in the Boardman way, is it possible that this change may be nullified by turning the bottle of honey over and standing it on the other end?

Naples, N. Y., Dec. 26.

[Our correspondent expresses pity for the consumer who has to pay 25 cts. for $\frac{1}{4}$ lb. of honey. While we share to a certain extent this feeling, yet when we come to consider the cost of the package, cutting up the honey into small squares, of taking care of the drip, and the further fact that the railroad companies must have a reasonable profit, 25 cts. is not out of the way; and we must not lose sight of the fact that comb honey put up in this way is a choice tidbit, and so far from being a staple it is a luxury. It is fully the equal of other choice desserts found in the Pullman diners.

Why not go out on a campaign, as the makers of cheap syrups do, and get something nearer the value of our honey in comparison with some of the stuff that ought never to go into the human stomach? If we bee-keepers encourage low prices and sell at low prices, there is danger that our product will go down to the level of table syrups when in fact it should go higher.

When $\frac{1}{4}$ lb. of comb honey is sold for 25 cts we must take into consideration that it costs money to get these small portions before the trade, and that it must be of the very finest quality. Any thing but the very best would ruin the trade instantly. Travelers on Pullman cars, and patrons of high-class restaurants, do not care so much for the cost of an article provided it is of first quality. They are willing to pay the price for they have the money, and in our opinion it is not necessary to waste any pity on them.

It has been demonstrated that honey can be sold at a fair price providing the right kind of educative advertising is used. We must dissipate the notion that comb honey is manufactured, first of all. We must show that the flavors of honey vary as do the fruits from the orchard. We must show that our product is more easily digested than any other sweet known, and that, while it costs more, it is worth more. Why, then, be content to get a paltry 10 or 15 cts. per lb. for an article that is intrinsically worth 20 or 25 cts. as compared with other sweets.

Admitting that there is a demand for a low-priced honey, let us supply that trade with candied honey in paper bags, or extracted in tin buckets or paper pails. In this campaign of advertising we should show that extracted is just as good as comb honey. We must first of all convince the consumer that it is not glucose, but much better than glucose or any of the cane syrups.

Bulk comb honey can be sold in the Northern States; but retailers must be cautioned to keep such goods at a temperature not lower than 70 degrees Fahrenheit. A great many groceries have a temperature of about 70 during the day, while at night it goes down to nearly freezing, and Sundays it goes even below that. Bulk comb honey can not be

sold in such stores. It is doubtful if any sort except that which is candied could be sold in such places. This is one serious objection to chunk honey in the North.—Ed.]

NATIONAL BEE-KEEPERS' ASSOCIATION NEWS ITEMS.

The Wisconsin State Bee-keepers' Association was first to join the National in a body, and has ever since continued in that relation. It was also the first this year to vote to send a delegate to the National convention of 1910. Let other State and local associations do likewise, and thus build up both. The membership of the National to-day, Feb. 19, is 3600.

The Executive Board asks all to report to President York or the General Manager any suggestions as to how the National Association can be of more help to its members. Several suggestions have been received already, but others are wanted.

The revised edition of "Bee-keepers' Legal Rights" is now in the hands of the printer. A copy will be mailed free to any member requesting it.

There have been two more recent cases of bee-keepers sending in their dues and asking for help after getting into trouble. This is contrary to the constitution. No insurance company insures burning houses.

The poison-spraying of open fruit bloom in the Southern States has begun, and some apiaries are already affected by it. Complaints of bees spotting the washings hanging on lines in the South are coming in. The North will have similar complaints later. The long cold winter is likely to cause much spotting of washings when bees have their first flights. The bee-keepers should try to plan the wash-days and place their bees out afterward.

It has been suggested that the time and place of the bee-keepers' conventions throughout the country be arranged with the Executive Board of the National Association. If this is done, it may be that dates can be selected when certain officers of the National can be present at nearly all local meetings; and it may be that the system of meetings for the good of all can be planned, something like the various State fairs in the fall.

Director R. A. Morgan, of South Dakota, suggests that the National issue quarterly instead of annually, and save postage; also, the more frequent reports will help to create more interest among bee-keepers.

Director J. E. Crane, of Vermont, thinks it would be a good thing if the National would own and rent to members stereopticon views for bee-lectures, and thus better advertise the use of honey, and also have the National advertise in papers.

Thomas Chantry, of Utah, suggests that the dues of the National be increased so that there will be more money in the treasury for use in the interest of membership, and he would urge every present member to get in new members for the National.

Up to this date, Feb. 19, since the last National report was issued, the General Manager has received \$1.00 from each of 80 members, and 50 cents from each of 545 members. This far exceeds any other year for fifty-cent dues, and shows that the local associations are co-operating very nicely. The fifty-cent rate to local associations when joining in a body helps the National, both in number of members and financially.

Invitations for the 1910 meeting of the National have been received from Toronto, Can.; Buffalo, Albany, and Rochester, N. Y.; Nashville, Tenn.; and Zanesville, Ohio.

The Executive Committee will not decide as to the time and place of the next meeting until, perhaps, the first of June, so there will be plenty of time for other cities to get in their invitations to the General Manager before the final decision is made.

There ought not to be very much trouble in getting the desired 5000 membership by the time of the National convention of 1910. There are now 3600 members, so that only 1400 more would be necessary.

Those who are in arrears in their membership dues are kindly urged not only to remit at once to the General Manager, but also, if possible, to get their neighbor bee-keeper to become a member also. In this way the 5000 membership could be gotten within the next sixty days. Why not do it?

N. E. FRANCE, General Manager, Platteville, Wis.



MRS. J. W. BACON'S APIARY OF LARGE HIVES FROM WHICH THERE WERE ONLY FIVE SWARMS LAST YEAR.

SHORT CUTS IN A QUEEN-REARING YARD.

Putting Bees and Queen into a Mailing-cage to Avoid Stings.

BY MRS. J. W. BACON.

I see you have trouble by getting stung when putting up queens to mail. I have worked at this for a number of years, and in putting up hundreds of queens this year I had my thumb stung just once. Try it this way:

Fill the candy-hole, and tack the wire cloth on all except the last hole at the end. Now turn the wire cloth back, not quite half way, and you will have a long narrow space to put your bees in. Hold the cage in the left hand, with the thumb over the opening. Catch the queen first, and the bees by the wings as they have their heads in cells of honey. If you hold the cage so the back end is up they will run into the middle space.

I wear an apron made of factory cloth, with a double pocket—i. e., a small pocket on the outside of a large one. The small pocket is for tacks and the large one holds my hive-tool, leadpencil, a small wing to brush bees with, and a dozen queen-cages.

When catching queens I take along a box with blocks of eggs; and if I find a hive without eggs I do not look for a queen, but give them a block of eggs. I can give out eggs and catch a dozen queens in less than an hour. The next time over, or in two or three days, I find queens laying in many hives to which I gave eggs; and if they have started cells I give them a virgin queen; and so it goes, a continual round for the season.

I use lard on my hands to keep the propo-

lis from sticking; and if the bees are cross a little honey on the back of my hands seems to quiet them.

THE ADVANTAGE OF A LARGE HIVE.

I see that large and small hives are discussed. Ours are about right. They have a tight division-board and chaff cushion on each side. We winter our bees on eight frames. One can easily make this hive large (fourteen frames) or small, in the spring. The strong colonies are soon ready for an extra frame, and sometimes we keep putting in frames until they have twelve. When we are ready to put supers on these hives we take out these extra frames of brood, shaking off the bees, and use them to strengthen weak colonies, thus reducing down to eight frames. The bees fill the supers immediately. You see I would not want a hive that could not be made large or small at will. Taking out the brood at this time seems to retard swarming. We had five swarms from sixty colonies last year.

Waterloo, N. Y.

[The plan you describe for putting bees in a mailing-cage is all right. We used to employ that method; but it took so much time that we abandoned it in favor of the plan that we described and illustrated. Our boys seem to prefer the faster plan, even if it does result in more stings to their fingers.]

If a colony be given a large amount of breeding capacity, such as can be afforded by a large hive there will be far less swarming than from one where the breeding room is limited. The bee-keeping world has not given this question enough thought and attention. Our columns are open to a further discussion of the matter.—ED.]



SYVERUD'S AUTOMATIC BEE-BRUSH.

As the comb is passed between the brushes they revolve in the opposite direction, thus wiping the bees from both sides at once.

AN AUTOMATIC BEE-BRUSH.

A Double Brush for Freeing Combs of Bees Almost Instantly.

BY L. A. SYVERUD.

In shaking bees from combs I have often thought how nice it would be if we could get the bees off quickly without scattering them too much. With this in mind I constructed a brushing-machine as shown in the accompanying illustrations. The device is what I call a rotary bee-brush, and it wipes the bees from both sides of a comb at one operation as rapidly as the comb can be handled.

In the first view the position of the comb is seen when it is ready to be passed between the brushes, the right hand just touching the cord, which, when carried out by the hand, revolves the brushes in the opposite direction from that in which the comb is moving, and instantly cleans it of bees, that is, the same movement that pushes the comb between the brushes pulls the cord which causes the brushes to revolve.

I like to have the bees drop at the entrance of their own hive; and to do this I have arranged a hopper in front of the brushes (not shown in the picture), to prevent the bees from being scattered too much. I place the machine in front of the hive and a little to one side, so that the hopper is directly in front of the entrance. I remove one comb at a time, give it a shake into the hopper and pass it quickly between the brushes; then swing it around to the back of the hive and put it directly into the comb box or bucket. The work can be done in much less time than by ordinary methods. Coiled

wire springs revolve the brushes back to their original position, and also wind up the cord ready for the next comb. Next season I expect to try foot power for operating the brushes.

Canton, S. D.

[Double brushes, for brushing *both* sides of combs at once, have been illustrated in these columns before; but Mr. Syverud has gone one better by making a revolving brush, the bristles revolving *against* the side of the comb. At first thought this seems like a good principle. It is a question, however, whether a machine like this can be carried around to each hive and adjusted to the inequalities of the ground, and in the end save time over a common hand brush. The roller brushes would need washing, probably, as often as any brush. —ED.]

NEW INVENTIONS FOR EXTRACTED-HONEY PRODUCTION.

Some of the New Appliances Tested.

BY H. H. ROOT.

In the November issue of the *Bee-keepers' Review* Mr. W. Z. Hutchinson gives his experience with uncapping-machines, capping-melters, honey-knives, etc. After having tried the Ferguson uncapping-machine, described on p. 403, July 1, GLEANINGS his verdict is that, if combs are built with plain $\frac{3}{8}$ -inch end-bars, and are as straight and smooth as a board, and slightly bulged on each side, so that all of the capping surface projects about $\frac{1}{8}$ inch beyond the edges of the end-bars, but little more can be asked for in the



Steam uncapping-knife.—A gallon can over a double flat-wick oil-stove furnishes the steam necessary.

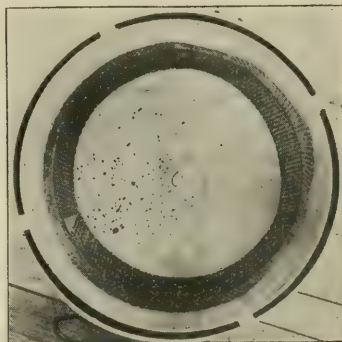
way of an uncapping-machine. However, although all of his combs are built on wired foundation, not one in four, he says, answers to the above requirements. Even when a comb is reasonably straight, he points out that one side is often slightly bulged while the other is correspondingly depressed, the result being that one side is uncapped perfectly while the other is untouched.

In our own extracting we also have given the Ferguson uncapping-machine a trial, and we agree perfectly with Mr. Hutchinson. We have not tried all of the uncapping-machines that have been described and illustrated; but in our opinion there are a few objections that will hold true with all. We believe that the mere cutting of the cappings and getting rid of them is only a part of the problem that presents itself. The real problem is to *uncap the depressed surfaces without complicated mechanism, the expense of which is prohibitory*. We are sure that an uncapping-machine may be built, and probably is built, which will uncap in a satisfactory man-

ner; but the question is, are such machines practicable? For the majority of combs, even should the machine do the work, it is probable that individual attention would need to be given to take care of the depressions, and we very much doubt whether much faster work could be done, in view of this, than a skilled operator can do with a good uncapping knife.

THE STEAM-HEATED UNCAPPING KNIFE.*

For several years we have believed that the steam-heated knife is the best solution of the uncapping problem; but we have hesitated to say very much about it for fear that there might be some objection to it that would come up after the plan had been tried extensively. Mr. Hutchinson calls the steam-knife a "daisy," and regards it as one of the "biggest little inventions of the apicultural times." The best thing about the steam-knife is that it does not get clogged or gummed up, and we have found that a razor edge is not as necessary as with a cold knife. A cold knife that is good and sharp works well until wax begins to adhere to the edge, and then the knife mutilates and tears the comb in a most aggravating way. This trouble



The inside of the capping-melter looking from above, showing the circular screen at the bottom.

may be overcome by dipping the knife in hot water, but this is only a partial remedy. The steam heated knife quickly passes through tough or tender combs with ease, and without breaking or mutilating the cells.

Much less force is needed, and the work is not nearly as tiresome.

A tea-kettle with the rubber tube attached to the snout by means of adhesive tape may be used for a boiler; but a copper can is better. If the tea-kettle is used, several thicknesses of cloth



The Root capping-melter showing the removable circular screen. The square box is placed over the top of the can, and give plenty of room for the operator.

*This device (or one quite similar) was first used in Europe. It appears to have been illustrated and described in several European bee-journals some years ago. We first showed it at the National Detroit Convention in 1908, although we had been using it a year prior to that time.



BEEES KEPT IN A HEN-HOUSE WITH HOLES SAWED FOR THE HIVE-ENTRANCES.

should be placed over the opening, and the lid crowded down tightly to make a snug fit. A round disc of pasteboard inside the screw-cap on a can makes every thing steam-tight when the cap is turned down with the fingers.

THE CAPPING-MELTERS.

Mr. Hutchinson found that the large Beuhne capping-melter did satisfactory work when he removed the inner separator and allowed the honey and wax to run out away from the heat as quickly as possible. Whenever the inner separator was used, the honey was spoiled because of the long-continued heat; but when the honey was gotten away from the heat immediately, the flavor and color were not injured. Mr. Hutchinson did not find the Root capping-melter satisfactory, for the reason that it did not have enough capacity for the rate at which he was extracting. The one-burner Root-melter, as has been described in these columns, is not intended for the largest apiaries, where from two to five thousand pounds of honey is extracted per day. At this rate a larger melter must be used, and there must be two burners to furnish enough heating surface to get rid of the cappings as fast as they are removed from the combs. An improved strainer is now used on the Root melter, which greatly increases its capacity, but, at the same time, a much larger size is needed for the largest apiaries.

There is one point that ought to be mentioned in connection with capping-melters; and that is, that, if the honey and wax are not separated while hot in some such arrangement as the Aikin separator, which has been described before, the honey, if allowed

to cool under the layer of wax on top, takes on, in some way or other, a waxy flavor which is not noticeable if the wax cools by itself. We can not explain this; but we believe it to be a fact, since others besides ourselves have noticed it. For the best results, therefore, a separator should be used.

BEEES AND CHICKENS IN THE SAME BUILDING.

BY W. T. BAILEY.

I started in the bee business with four colonies in the fall of 1908. Not knowing any thing about it I put the hives in the hen-house and sawed holes for the old-fashioned entrances to stick through.

I was so much interested in bee culture that I talked bees to every one I met, and one gentleman loaned me a very old and well-worn copy of a bee-book which proved to be the A B C of Bee Culture, by A. I. Root. This book made me a winner, and I have since felt very friendly to bee people, and especially to Mr. Root, and my gratitude goes out to him. From the four old colonies and two new ones last summer I secured about 150 lbs of comb honey, which was sold at a good price. I now have ten colonies; am Italianizing, and expect to glut the market next year.

Suffolk, Va., has 10,000 people, two miles west of the Great Dismal Swamp, and is the biggest peanut center in the world.

Suffolk, Va.

THE MOTOR CYCLE FOR THE BEE-KEEPER.

Traveling to Outyards at the Rate of a Mile a Minute.

BY L. F. HOWDEN.

Having had three years' experience with motor cycles I am glad to relate my experience, as it may be of some benefit to those who run out-apiaries — particularly those who need some means of locomotion that is more rapid than the horse or even the automobile.

Of course, there is much pleasure to be derived from riding a motor cycle; but notwithstanding this fact I used mine mostly for business, having found it to be a wonderful money-saver by saving time, which is quite an important factor with a man who runs out-apiaries many miles from home.

Another reason why the motor cycle excels other means of travel is its low expense of up-keep. I have found that, after riding a two cylinder five horse-power "Indian" 4000 miles, my expense for repairs has been only \$10.00 to 15.00, which is surely a small amount when one takes into consideration the distance traveled, time saved, and the satisfaction of having this willing steed always ready. The oil and gasoline required to run a motor cycle depend on the condition of roads, hills encountered, etc.; but I think that, as an average, a gallon and a half will run one a hundred miles.

The speed of a motor cycle is almost un-

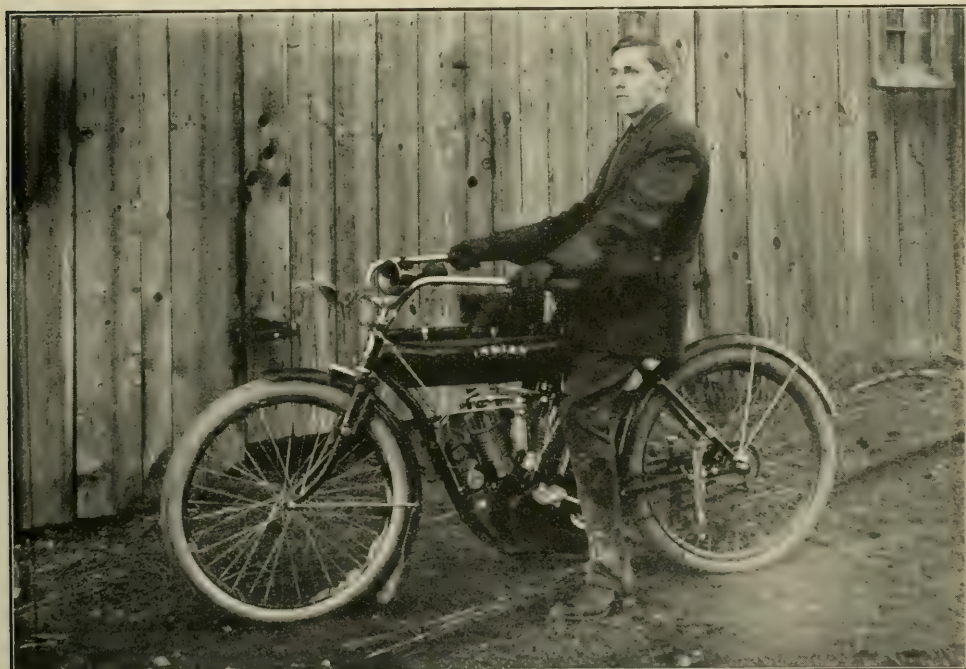
limited. I have traveled at the rate of a mile in fifty-five seconds, and there still seemed to be more speed in the machine. It is rather hard to tell what the maximum speed might be; but I think this rate is fast enough for the ordinary bee-keeper. It is also possible to throttle the machine down to five miles an hour.

As I have been in the supply business I had my machine equipped with a luggage-carrier which I used to quite an extent for carrying packages to and from the depot, having carried as much as 50 lbs. at once.

To those who ask how the "Indian" climbs hills, I will say that the five-horse power machine will climb any hill that an automobile or horse and wagon will negotiate. Those who live in a hilly country should buy the two-cylinder five-horse-power model selling for \$275.

Fillmore, N. Y.

[There are several good makes of motor cycles on the market. Besides the one mentioned in the article there are the following: Curtiss, Reading, Standard, Thor, Yale, Merkle, Pierce, and some others. The self-propelled cycle has now come to so high a state of perfection that it can no longer be considered an experiment but a practical everyday machine for business or pleasure. The expense, as stated by our correspondent, is very moderate. Something, however, will depend on the mechanical ability of the rider and his care of the machine. If he fails to keep his bearings well adjusted and oiled, and allows his machine to get out of



LEON F. HOWDEN READY FOR A LIGHTNING TRIP TO AN OUT-APIARY.



A. I. ROOT'S FLORIDA HOME, WITH A GLIMPSE OF THE TROPICAL VEGETATION ON THE NEW ACRE JUST PURCHASED FOR THE CHICKENS.

order, he may have some expensive repairs. If the directions of the salesman are carefully followed out, there is no excuse whatever for any unnecessary wear on the machine. The chief expense for up-keep will be for tires; and the cost even then will depend very much on the speed with which the rider drives, and whether he is careful to pick his way, selecting the best parts of the road instead of taking every thing as it comes—glass bottles, sharp stones, and all.

In this connection we would not advise any driver of a motor cycle to go faster than 25 miles an hour. This is fast enough. High speeds increase the cost of up-keep, to say nothing of the danger. While some of the high priced machines are capable of making a mile a minute, there is considerable danger at such speed. One young man in our locality, a fast rider, took a severe tumble, and was unconscious for several hours. It is a wonder that it did not kill him.

As between a double cylinder and a single-cylinder machine, the latter will take practically all the hills unless the grades are very steep. The two and four cylinder machines are a little quieter in operation, while the single cylinder gives off a sharp bark at every impulse. In localities unfrequented by automobiles some horses are badly frightened by the single cylinder exhaust.

It is our judgment that a good motor cycle can be very advantageously used for out-apiary work. The cost is insignificant when compared with an automobile; and when one does not wish to carry too large an amount of luggage he can make a trip to the

yards quite as satisfactorily as in a full-fledged auto.

Perhaps the average person feels that he could not learn to run an autobike. Almost any one who can run a common bicycle will have very little difficulty in learning to handle one of the self-propelled type. He should seek, however, to get all the "pointers" possible from the agency where he gets the machine. Then if he will be content to ride at a moderate speed and every day look over his tires bolts, and nuts, and see that his machine is well oiled, he will have very little trouble.

Very good second hand autocycles are sometimes to be had at one-half or two-thirds the price of a new machine; ordinarily, however, we would advise the purchase of a new machine; and for out-apiary work we would get a luggage-carrier in connection. The price of the single-cylinder machines runs up to about \$200.—Ed.]

THE MOTOR CYCLE FOR CARRYING SUPPLIES.

BY H. G. QUIRIN.

We note that we are to have several articles on the automobile and its use in out-apiary work. We are all interest, as for some seasons past we had been thinking of getting one for that very purpose, but for various reasons did not do so. Instead we bought an up-to-date motorcycle, for we figured that we could build a carrier on the rear, which

would enable us to carry 50 to 100 pounds. This, together with a horse and spring wagon we have, answers all right except in the fall when the bulk of the honey is taken off, when, of course, we require a two-horse wagon.

While the motor cycle fills the simple want of taking one over the road, it is not all that one might desire when it comes to carrying freight. In the first place, it has no springs and does not ride as easy; and in carrying bees and foundation it takes careful riding over the rough spots so as not to knock out the foundation and smash the combs; but by placing a thick cushion on the carrier, and wedging up the frames of foundation good and tight, one can carry them all right. When carrying bees and brood it is necessary to have the frames wired, and such combs selected as contain but little or no honey. Of course, old and tough combs which are well fastened at all sides are preferable to new ones at all times.

When it comes to speed, there is nothing to compare with the motor cycle, as most standard makes speed up to a mile a minute; but for rough, sandy, or muddy roads, they are no good.

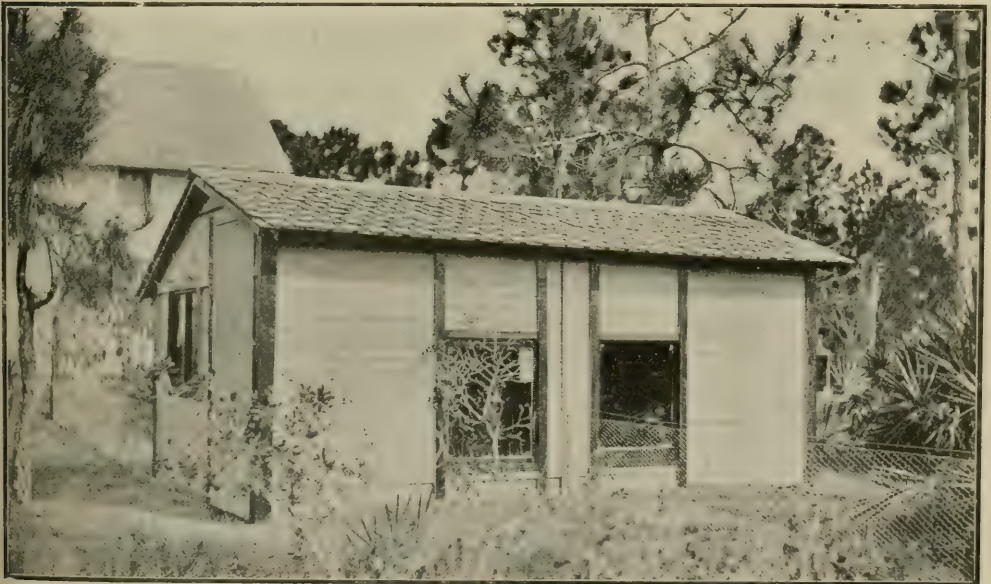
It seems to me that the ideal auto for a beekeeper would be of the high-wheeled type with friction drive, solid tires, and built after the fashion of a spring wagon, motor to be air-cooled, and the rig capable of carrying about 500 to 800 pounds. There is a high-wheeled auto delivery in our town, which does an express business and has been running all winter through all this snow. I think it is an International.

Bellevue, Ohio.

A. I. ROOT'S FLORIDA BROODER-HOUSE.

Through the kindness of one of the readers of GLEANINGS from the North, who visited us with his koljak, I give you a glimpse of the brooder house I have mentioned, and also a view of our Florida home with some of the tropical vegetation in the foreground. The brooder-house is 8×14 feet, and is divided by netting in the middle so as to make two rooms, 7×8 feet each 4½ feet high on the north side, and 5½ high in front. Wesley and I built it, although neither of us is a carpenter. Almost every stick of material is cull flooring that costs here only \$12.00 per 1000.

The sills are 2×4, but all above the sills is this flooring 4 in. wide. The corner boards are flooring nailed together, and the siding is then nailed *inside* of these. I ordered cheap shingles; but as they were out, I took the best cypress and placed them two inches apart, as you will notice in the picture. I got two damaged windows to let the sun in on cool mornings. Each apartment contains a brooder with 25 chicks, and by shutting the doors as soon as it begins to get chilly at night you would be surprised to see how warm and comfortable it is inside until the sun gets up again next morning. On the north side are long shutters 2 ft. wide, that can be swung up under the eaves during very warm weather. The netting that goes down a foot into the ground keeps out all night prowlers; the joints are all tight enough to keep out cold winds and frost, if any should come, and the chicks have a dry warm place to scratch and exercise when it is damp or



THE BROODER-HOUSE THAT KEEPS OUT THE "VARMINTS," LETS IN THE SUNLIGHT, AND TEACHES THE CHICKS TO "GO IN WHEN IT RAINS."

rainy outside. Clear around under the eaves is a little long box or shelf where all tools and small things needed in the care of the chicks may be kept out of the way, where they can be seen at a glance, and where you can reach them without any stooping. My decision is, just now, that if you are going to run an incubator (even down in *Florida*) you need some sort of brooder-house. I do not think this one cost, labor and all, over \$40 00. Several who have looked it over have suggested it wouldn't be a bad place for *two people* to live in, in this genial climate, especially if the aforesaid "two people" had got tired of paying out money for rent, and, at the end of the year, having nothing to show for it. I might add that Wesley and I have built three similar houses for roosting and laying houses. These, however, have no windows nor doors except screen doors covered with netting. The whole south side is netting. Each house is shut up at night and opened at daylight.—A. I. R.

FASTENING FULL SHEETS OF FOUNDATION IN SHALLOW EXTRACTING FRAMES.

The Spoon and Melted-wax Plan Found the Most Satisfactory.

BY F. DUNDAS TODD.

In the shallow extracting-frames I use full sheets of foundation; but neither in those of my own make nor in those made by Root is there provided a wedge device for fastening in the sheets, so one must fall back upon wax as a cementing medium, or grip between two strips of wood. My preference is for wax.

When brought face to face with the problem of foundation-fastening I gathered together the literature upon the subject in the various magazines and books and compared them all. Mr. Hutchinson described one method that looked rather alluring—one in which a mixture of beeswax and resin is melted in an oil-can and poured from the spout on to the top-bar of the frame along the edge of the sheet. I will admit that, in Mr. Hutchinson's hands, the scheme probably worked first rate; but with me it was an utter failure. I tried two different sizes of cans, and experimented with various sizes of aperture; but the wax set in the nozzle on the first pouring, and then the fun began. For a while I tried boring out the hole each time with a nail, but soon the clogging worked its way downward beyond reach. Then I tried plunging the can into the hot-water bath with the nozzle down. This melted the wax all right, but soon there was more water inside than wax, while outside the wax was speedily getting on top of the water. Besides, I was burning my fingers, and while it is possible my digits may in due season become injured to bee-stings I am afraid they will never become immune to scalds from hot water. So the Hutchinson idea after a

fair trial was voted unsuited to this locality. Louis Scholl's spoon method looked sloppy and inherently lacking in nicety; but I have a high opinion of his opinions, so I decided to give it a trial. After a little practice, and getting the tools adjusted to suit my hand, I found the system exceedingly good, and now I can fasten a few hundred sheets of foundation into position in a little while.

The essential tools are a suitable spoon and a frame-rack. "Suitable" is a rather vague term; but I have tried tea, dessert, soup, and big cooking spoons, and my choice is the dessert size. Mine cost me about 5 cts. in a hardware store, and is made of iron with a plated surface. As I held it in my hand trying to figure out how the melted wax would flow from its lip, my mind went back to the "cruise" of fifty years ago—that is to say, the holder for the melted fat and cotton or vegetable pith that did duty as light-producer in the cottar homes of Scotland. In general outline it suggested a Bartlett pear divided the long way, the core and meat being removed. So I decided to shape my dessert-spoon along the same lines, which was accomplished by the free use of pliers and hammers.

So please picture to yourself the main part of the body of the spoon being used as a reservoir while the sides at the point are folded inward so as to form an open ditch about $\frac{3}{8}$ inch wide through which the wax may flow.

While the melted wax is being poured on the frame this must be held upside down with the sheet resting on the under side of the top-bar. A support of some kind is emphatically necessary. My first was an experimental one to hold only one frame at a time; but once I had got the angles to my mind I made another to hold three.

Make a solid board frame of $\frac{3}{4}$ -inch lumber, 20 by 24. Diagonally across the face of it nail three cleats of the same thickness any convenient width, not more than an inch, the left ends (provided the cleats run clear across the board) being 3, 10, and 17 inches from the top, the right ends 10, 17, and 24 inches. Then, for plain frames of $\frac{3}{8}$ top-bar, make from $\frac{3}{8}$ -inch boards, such as one finds on boxes, three pieces slightly smaller than the inside dimensions of the frame, say 4 by 16. For Root frames the thickness should be $\frac{5}{8}$ inch. Nail these half an inch above the cleats, and the rack is ready. When in use mine stands on the bench with a slight backward tilt, being supported by a brace that is fastened to the back.

The wax is melted in a large jelly-glass that stands in a five-pound lard-pail containing water almost to the top of the glass. A small kerosene-stove is a convenient source of heat. The spoon usually rests in the water when not in use, so as to keep it warm and clean.

Everything ready, three frames are placed on the rack upside down; then sheets of foundation are slipped into place. It pays to handle the sheet with great care so as to keep it perfectly flat and the edges straight. The best edge is dropped on the frame so

that there may be perfect contact all along the line.

Dip the spoon in the melted wax and take up about half its capacity. Bring it quickly to the left end of the top bar; turn the handle of the spoon away from the body and pour out the wax, at the same time running the spoon from one end to the other. The left hand, slightly resting on the upper edge of the foundation, presses it down on the top-bar, and at the same time the lip of the spoon presses the lower edge against the board, thus getting perfect alignment. The bar being on a slope, the melted wax runs rapidly downward, just enough being caught in the depressions of the foundation to make a perfect cement.

When all three sheets have been fastened, the frames should be reversed and the melted wax applied on the other side.

Lastly, a word of caution as to the handling of the frames once the foundation has been fastened. The wax sets very speedily, but it takes quite a while to harden, so the sheet of foundation must never be out of perpendicular. To reverse the frame, lift it off the rack and turn it slowly end for end. When the second application has been made lift the frame by both hands; lower one until the top-bar is perpendicular then change hands and bring the top-bar horizontal, proper side up.

The hive is, of course, the best place to store the frames until they are wanted for use.

Victoria, B. C.

THE LEGAL CONTROL OF BEE TERRITORY.

An Actual Case where No Law could Help Matters.

BY J. L. BYER.

With a good deal of pleasure we have read what Dr. Miller has to say in defense of his position on the question of the legal control of bee territory and before going further I wish to make it clear that, while I may have intimated in a former article my inability to understand the doctor's attitude on this question, yet I never for a moment questioned his sincerity and honesty in the matter. I am placed in quite a difficult position in attempting to combat the arguments advanced, from the fact that the proposition on which Dr. Miller bases all his theories on the question at issue is, in our opinion, entirely untenable. I refer, of course, to the statement made by him that "if ever bee-keeping is to stand upon a firm basis like other lines of business, there must be such a condition of affairs that the bee-keeper shall feel just as secure against interference as the stock-raiser who is assured by the law that his fields shall be occupied by his cattle and his alone."

With all due regard for the opinion of others, I hold that the two cases are not at all

parallel; for before the stock-raiser has such privileges he must either own the land or pay an adequate rental for the same—something that it would be impossible for a bee-keeper to do in the many thickly settled communities where so many bees are kept to-day. As regards Australia and some other sparsely settled sections, we admit, as we did in a former article, that legal control of territory for the bee keeper might be possible; but, as pointed out in that same article, conditions that are applicable in such places would be entirely impossible in the more thickly settled communities.

I have already stated that I regard the doctor's "foundation stone" as an impossible proposition in so far as bee-keeping is concerned, and I may as well say at once that my belief is that all who contemplate going into bee keeping as a business may as well realize at the first that it is a business of many uncertainties, and be prepared to cope with the overstocking and other problems incidental to the calling, just as miners and others engaged in uncertain occupations expect the various ups and downs natural to the work from the very nature of the same. After all is said and done, it is gratifying to know that very few real bee keepers do encroach upon others, as here in Ontario, at least, it is quite rare to hear of a man moving bees near another who has located before him. At present I can recall only one instance that has come to my notice, and in that case one of our extensive producers moved right across the road from another bee-keeper; and I wish to say most emphatically that, unless there were mitigating circumstances that were not revealed to me, the bee keeper who did the moving is about fifty percent less of a man, in my estimation, than he was before I heard of the matter. As we have never been in the locality where this happened, all we have on the subject is second-handed, and we do not feel as well qualified to speak as though personally aware of all the facts.

The supposition that Dr. Miller advances regarding Mr. Jones moving to a locality suitable for maintaining 100 colonies, and then having another man move in near him with an apiary, is unfortunately too true in reality in some few cases; but when we go to suppose what would happen in a settled community where there were a number keeping bees, if a law were passed giving control of all the territory to one man—well, language fails me, and I can only appeal to imagination.

"There's no such conflict about a cow pasture; and why should there be as to a bee-pasture?" As we have already stated, the cow man, in order to get such exclusive rights, either owns or rents *all* the land his cows roam over. Let a bee keeper comply with these conditions, and then the two cases will in a slight degree be parallel, and not before.

Right here at my home I have a case that is not in the supposition class; and after explaining the matter I will ask Dr. Miller to

mete out justice on the theory of each bee-keeper owning his own territory. More than 60 years ago my grandfather had an apiary of 100 colonies, or thereabout, where my home apiary is now established. Right across the road, about a quarter of a mile away, his brother, my great-uncle, had a like number of colonies. If I remember my grandfather correctly, he started with the bees a year or so before his brother did, and I want Dr. Miller to note this fact, for this means that I should have prior rights to the field. In course of time both of these men died, and my father kept bees at the home yard while a son-in-law of my uncle now has bees in the yard across the road. As already stated, my home yard is where my grandfather's bees were standing 60 years ago; and while, in former years, there was no apparent overstocking, yet now in the matter of spring feed there are entirely too many bees on the range. To get around this difficulty I have for the past few years been moving away part of the apiary in the fall, bringing them home again at the opening of the aliske flow. This, of course, means a lot of work, and, from a selfish point of view, I might wish that my relative across the road would reduce the number of his own colonies, or else that a law were passed giving me, as the exclusive bee-keeper, the rights to the range. As he has a farm as well as the bees, it is not at all likely that he will ever move away nor yet discontinue keeping bees; and, indeed, under the circumstances I have never considered such a thing in the least probable. What do I intend to do in the matter? Why, some time I expect to get a new location and move to it, even if it does cause me considerable expense and inconvenience. That course, or putting up with present conditions, is my only alternative, and really I do not feel like blaming anybody about it either. But *suppose* both of us decide to stay on the job, and go on increasing these two apiaries—how would any legislation regarding the control of territory work out in our cases? It certainly would need the judgment of a Solomon to decide the matter. To complicate the case further, there are, at a conservative estimate, at least forty farmers on the range in question, most of them owning their land and growing aliske. *Suppose* the majority of them are keeping a few bees, which in the aggregate make up quite a number on this already stocked locality, how would the proposed legislation work in their case?

The illustration given is not at all an exaggerated picture, as there are many cases just as complicated as this that would be revealed if ever such a thing as legal control of bee territory were thought of. The more I think of the matter, the more it appeals to me as being utterly impossible that such a law as advocated by Dr. Miller would ever be workable; and this being the case, I too would end this article with the same words as he did his, and warn all prospective bee-keepers that "No bee-keeper in this land has a legal right to his bee territory;" and may I

be pardoned for appending the prophecy that he is not at all likely ever to have such an assurance?

Mt. Joy, Ont.

STRUCTURE OF THE HONEY-BEE.

A Lantern Lecture by C. P. Gillette, of the Colorado Agricultural College.

Delivered before the Annual Meeting of the Colorado State Bee-keepers' Association, December, 1909.

[Bee-keepers are often surprised to find that the subject of apiculture is so interesting to the members of farmers' institutes, or even to a popular audience. We have mentioned a good many times that it pays a bee-keeper well to give talks on the subject of bees, and many have followed our advice with both pleasure and profit. We have had a number of requests for scientific data arranged in an easily understood form, and we are very glad to place this article by Prof. Gillette in these columns, knowing that it supplies this information in a popular form that can be easily made use of by those who desire to give practical talks on apiculture.—ED.]

Without the pictures this address can be given only in part. The following is a brief extract from what was said.

The honey-bee is, with the possible exception of the silkworm, the most important commercial insect. Although the bee is handled and cared for throughout its life by man, it can hardly be considered a domesticated animal. A colony of bees in the apiary differs from a colony of wild bees in a beehive or a ledge of rocks only because of the difference in the home they dwell in. The insect intelligence is not capable of being taught as one might teach a dog or a horse.

Bees do wonderful things to provide for their home needs and the care of the young; but they do all from instinct, and not from education received from others after they are grown.

The social habits of the bee are greatly to be admired. The family, though very large, numbering thousands, live together in the utmost harmony. The bee colony is often referred to as a true commune where each colony is a single family, and each family, consisting of one mother and her children, will oppose to the death the intrusions of neighbors, although these neighbors may be of the closest blood relationships, perhaps first cousins, or even full sisters that left the home a few weeks before to start a home of their own. So, between families the bee is not a communist at all.

There are many species of wild bees that are not used for commercial purposes, and many species of ants that, like the honey-bee, live in colonies, but in no case do these social insects permit members of other colonies to enter the home and disturb the property there collected.

There are a great many fossils of insects found in rocks of the earth's crust that must have been formed at a time long before man inhabited the earth. It is altogether probable that our honey-bee was present upon the earth gathering nectar and pollen, cross-fertilizing plants, and caring for its home, be-

fore the earth was in a condition to be inhabited by human beings.

We are also interested in the honey-bee because it stands at the head of its class, thus ranking in the insect world with man in the realm of higher animal life.

The honey-bee is a true insect, and is built upon a very different plan from that of the higher animals with which we come in contact. The body is divided into three very distinct portions—the head, containing the organs of special sense and brain; the thorax, which is the muscular portion of the body, and to which are attached the legs and wings for locomotion; and the abdomen, which possesses the organs of digestion, reproduction, and, for the most part, the organs of respiration and circulation as well. The number of legs in the adult insect is six, a number which we do not find in other forms of animal life. The heart is a mere tube with openings along the sides for the entrance of the body fluid, or blood. This fluid is forced forward by the pulsations of this tube, and poured out into the body cavity again to bathe the tissues. Insects do not have a closed circulation.

The nervous system, which lies near the dorsal surface in all vertebrate animals, lies close along the ventral surface in the honey-bee, as well as in all of the insects. The honey-bee breathes, not through nostrils located in the head, but through small openings called spiracles, which open along the sides of the thorax and the abdomen. Holding the head of a bee or any other insect under water would not in the least interfere with respiration. There are no lungs. The air taken in through these spiracles is carried by minute branching trachea to every living part of the body, where it supplies oxygen to the tissues and takes away the poisonous carbonic-acid gas. So the honey bee never has pure and impure blood side by side. The blood is all the time kept pure.

The honey-bee possesses about the same organs of special sense as we find in higher animals; but these organs are built upon very different plans. That the bee can see, smell, taste, and feel there can be no doubt, and possibly it can hear also, but upon this point there is some reason for doubt. Nature provides only such organs for its numerous creatures as are specially needed. The bee must see and smell or it could not find the flowers from which the food is obtained, or both the young and the adult members of the bee family. It might be well to remember that all color in flowers, as well as all odor, is for the purpose of attracting the honey-bee and other flower-visiting insects to carry pollen from blossom to blossom for cross-fertilization. The flowers that do not need the insects to carry pollen in this way have neither beautiful colors nor any aroma to attract the insects, nor do they secrete nectar. If the flower blooms in the evening or very early morning, it is white or light yellow because these colors are most plainly seen in the dim light. If the color and size of the flower are such as to make it incon-

spicuous, then the odor is very strong so as to compensate for the lack of size and color in attracting the insect visitants.

Bees, like most other insects, pass through four very distinct stages in their development—the egg, the larva (or growing stage), the pupa (or resting stage), and the adult. The adult bee lives a few weeks only during the summer season; but those bees that mature late may live well into the honey-gathering season of the following year.

The bee, being a skilled workman (or workwoman), has highly developed instruments for carrying on its work. Among those that were shown upon the screen were the large compound eyes to see well with by daylight; the little ocelli, better adapted for vision where very little light is present; the eye-brush, used to clean all dust from the compound eyes that the vision may be clear; the compound hairs found only upon those bees that gather pollen, and especially adapted for the purpose of entangling the pollen grains as the bee tumbles about in the flower; the brush, by which all of these pollen grains are collected to be placed in the pollen-basket; and many other very interesting structures.

While the bee is of great commercial importance to man as a gatherer of one of the choicest sweets that we have upon our tables, it probably does even greater benefit in the cross-fertilization of the flowers of our agricultural fruits and plants, and so cause larger crops. There is some question, however, whether or not the honey-bee greatly increases the yield of alfalfa seed, as the flowers of this plant seem to be able to fertilize themselves without the assistance of visiting insects.

RESULTS OF BEE-KEEPING LEARNED FROM BOOKS.

A History of a Beginner's Mistakes and Experiences.

BY MARTHA K. PURSELL.

I have studied the theories and read the practices of bee-keepers until it seems I have all that books can give me. "Langstroth, Revised by Dadant," "Quinby's New Bee-keeping," "The A B C of Bee Culture," Miller's "Forty Years among the Bees," "Advanced Bee Culture"—these have been my text-books.

To look back on the work of the last few seasons is to laugh. It was a blind effort to use book methods without knowledge of underlying principles—a succession of mistakes, with changes often enough to prevent total loss.

CHAPTER ONE.

In the early spring one year I was in a run down condition of health with a pocket-book to match. How to change these conditions became the question. My physician said I should be more out of doors. My home, on the outskirts of a suburban town,

offered a suitable location for bee-keeping, so I finally decided to try that.

The initial proceeding was to subscribe for GLEANINGS. In order to understand terms used several good books were read. This reading only showed how much I had to learn. I then subscribed for the *American Bee Journal* and the *Review*. Back numbers of GLEANINGS and the *Review* introduced me to Miller, Doolittle, Alexander, Townsend, and all the other lights of varying power which illumine the world of bee-keepers.

The diversity of methods seeming at first to contradict each other was a source of much confusion of mind. I worked at first, as many in every line continue to do, by the rule of thumb. My first order for supplies was:—

- 1 ten-frame hive nailed and painted, full sheets.
- 5 " " in flat, full sheets.
- 1 Danz. super ready for use, full sheets.
- 1 standard smoker.
- 2 honey-boards.

We had an opportunity of witnessing free demonstrations on a roof in Philadelphia. My twelve-year-old son, destined to be my assistant and successor, and myself were soon on hand to see how bees were handled. On May 15 we carried home a four-frame nucleus with queen. This is hive No. 1.

Before the supplies arrived I ordered from a local breeder of golden bees a two frame nucleus and queen. These were to be called for on notice. The season being unusually late they were not received until May 25. Hive No. 2.

Later purchases of bees were as follows: On the last of June a one frame nucleus with extra bees and fine queen bought by the boy when the roof apiary was closed for the season. Hive No. 3.

A box hive of black bees purchased in July of a neighbor was drummed into a ten-frame hive filled with nine foundation frames and one comb from No. 3. Their queen was lost, but they raised a fine Italian. Hive No. 4.

June 28 we attended a field meeting, and there heard that the season was over. We had supposed that there was always honey all summer, and wondered what No. 1 would do now if it grew strong. Perhaps it would swarm with the fine queen. We would prevent that, and we did, to our sorrow.

When it became apparent that we would get no honey from No. 1, our only hope, the gibes of the family determined us to get honey somehow; so I paid \$6.00 to another neighbor for an eight-frame hybrid colony. This neighbor had been keeping bees for several years, and assured me that he usually secured as much honey in the fall as in the spring. Result— all field bees returned to their old home. On examination, neither eggs nor queen was found. After waiting twelve days to see if the stray virgin had mated, we found no queen. Sent the boy to town to buy a fine Italian queen; introduced on the candy plan, only to find it dead a few days later. Growing desperate at this delay, but still hoping for honey, I inserted a cell raised in a baby nucleus from the egg. The queen resulting was superseded the fol-

lowing spring. Can you wonder that it gave us no honey and required feeding for winter? Hive No. 5.

The purchase of a queen Sept. 1, when the Ferris plan was so large on my horizon, completed the amount spent for stock during the year, which was \$25.50. This, and a bill for supplies, used and unused, of \$20.85 was on one side of my ledger and the other side was blank.

MISTAKES OF THE YEAR.

1. Putting in all the full sheets of foundation before they were needed.

2. Trying to get most of it drawn out by giving every nucleus a full set at once. Some of it was chewed into holes or propolized.

3. Changing to sectional hive too late in the season, and when the colony was not strong.

4. Trying to raise a queen in a nucleus from the egg.

Colony No. 1 could have been made to produce extracted honey if a shallow super had been given over a contracted brood-nest, as the ten frames were filled with honey when it was broken up, in an effort to change to sectional hive.

By the time winter set in, the bees were in this shape: No. 1 had ceased to be. This had been transferred late into one part of a sectional hive, and was thought to be strong enough in bees and stores to winter, but was found queenless and dead.

No. 2 was strong and full of stores.

Nos. 3 and 4 were in a ten-frame hive with partition between, *a la* Ferris.

No. 5 had a poor queen, and had to be fed for winter.

No. 6 was another hive, *a la* Ferris, made up from combs of No. 1, No. 3. and No. 4, with queen purchased in September in one side, and one raised from cell found in No. 1, after her queen had been killed in needless changes, in the other.

To be continued.

REMOVING BEES FROM THE CELLAR.

A Cold Day Should be Selected in Order to Prevent the Bees Stamping.

BY J. E. HAND.

It will soon be time to remove bees from cellars, and begin preparations for a bumper crop of clover honey, for which the prospects never looked brighter than now. All the clovers went into the winter in excellent condition, and the heavy blanket of snow has kept them so. Bee keepers have every reason to be encouraged, and should put forth every effort to make the season of 1910 a record-breaker for honey production.

A good start is a long leap toward winning the race; therefore our success will, in a great measure, depend upon giving our bees a good send-off in the spring. This is very important. A mistake made at this point can not easily be rectified, and the result is often a lot of weak and unproductive colo-

nies that might have been profitable honey-producers had the bee-keeper performed his part in an intelligent manner.

WHEN TO REMOVE BEES FROM THE CELLAR.

The time of soft-maple bloom is usually considered the right time to remove bees from the cellar. Begin operations in the afternoon of a cold cloudy day, when the prospect is good for continued cold for two or three days. When a warm day comes the bees will fly out naturally, and, in the absence of any excitement, will mark their location and return to their respective hives. There will be no drifting, and, best of all, no robbing.

If bees are removed from the cellar on a warm sunny day there is bound to be a mixup, which is little less than a stampede. Bees will rush from the hives without marking their locations, and return to some other hive to which they may be attracted by an unusual commotion, and thus some hives will become jammed full while others will be weakened to such an extent as to give them a serious setback. Robbing is sure to begin, and will cause more or less trouble and vexatious losses until the honey-flow begins; for a bee once a robber is always a robber, and is good for nothing else. All this trouble may be avoided by exercising a little care and starting right.

When the bees are removed from the cellar it is a good plan to spread burlap sacks over the hive and push a telescope cap down over the whole hive and let them severely alone until settled warm weather. Nothing is gained by spring tinkering with bees except to feed liberally any that may be short of stores.

Birmingham, O.

[We particularly indorse our correspondent's recommendation as to the *kind* of day when bees should be taken out of the cellar. Beginners who have bees to take out would do well to follow these directions carefully. —ED.]

THE BEST PLACE FOR BAIT SECTIONS.

Comb vs. Extracted Honey.

BY CHAS. D. WEST.

Since my brother was killed (in July, 1907) I have been in the bee business with my father, Mr. N. D. West. We are running 500 colonies, all for comb honey except 80, which we run for extracted. We use an eight-frame automatic extractor run by a gasoline engine. We find it saves us time and labor. The engine is also used to run our saw. Until we bought the engine and extractor we did our extracting by hand, and our saw was run by horse power. The engine is safer and more convenient.

In the Jan. 1st issue I read an article by H. E. Crowther, on the best place to put bait sections. If he will pardon me I will make an infringement on it (not a criticism).

WHERE TO PUT THE BAITS.

I am inclined to think the center of the super is the best place. We have also used bait sections both ways, and obtain better results in the center. Bees usually begin their work in the center of the brood-hive where most of the eggs and brood are found. If a hive is opened on a cool morning, most of the bees will be clustered in the center of the hive, where the brood is usually the thickest. If the cover is raised from the supers on a cool morning, and the bees are there, they will be in the center of the super, even when no bait sections are used.

The hive we are using needs two supers to cover the top; and by using the bait sections in the center it requires only half as many. After the bees are up in the sections, and working well, they will stay there as long as the honey-flow is good and they are kept strong.

THORNS FOR SUPPORTING FOUNDATION.

Mr. Crowther's idea of the short splints in the top-bar to prevent the foundation buckling is a very good one. A few years ago, I remember, my father used long thorns in the top and end bars to prevent buckling; also to serve as supports to keep the foundation from falling out while being carried from one place to another and while handling. Since bee diseases have been in this locality, we have discarded the use of the thorns, and use foundation which is wired vertically and horizontally. This keeps it from buckling. The thorns sometimes bother about removing the combs when they are to be made into wax or when they melt out.

EXTRACTING SUPERS OVER EXCLUDERS.

Until the last three years, we have run, for comb honey, about 500 colonies in five different apiaries. The last three years we have been running one apiary (our home apiary) of 80 colonies, for extracted honey. From this yard we get more honey with less work. The production of extracted is not only labor-saving but can be looked at from the financial standpoint as well. One hundred good colonies run for extracted honey will produce more pounds of honey than the same number run for comb honey. The past season we got more honey from 76 run for extracted honey than from 100 which were run for comb, about two miles distant.

Excluders do not interfere with the storing of honey. As early in the spring as the bees are strong enough we put on a super of extracting-combs *without* the excluder, and let the queen lay in the super as well as in the brood-chamber if the combs above are in proper condition. By this method there are two hives of brood, which are better than one. Of course, this super must be put on in time. The queen, after the super is full of brood, is put in the lower hive, with the excluder between. The brood in the super is allowed to hatch in time to help gather the honey-flow which is to be on hand soon. By using this plan the colonies will be a half stronger in bees.

This is also a fine way for making increase.

By having bees hatched in the super they will return to that part of the hive with the nectar which they gather. This induces the bees in the lower hive to store the honey above, and save the lower combs for brood.

Middleburg, N. Y., Jan. 24.

[It is generally conceded that more extracted can be produced under the same conditions than comb honey; but how much more is a mooted question.—ED.]

“DRIFTING” AFTER MOVING OR SETTING BEES OUT OF A CELLAR.

What is “Drifting”? A Discussion of the Conditions which Cause it, and the Remedies.

BY R. F. HOLTERMANN.

The question often presents itself, as to how we can prevent bees, under certain conditions, from drifting. By “drifting” is meant the tendency bees have to fly out of their hives in considerable numbers, and, instead of returning, go to a new location in the apiary. This may result in the bees being attracted to the most populous colonies, or possibly from one end of a row to another, or from one side of the apiary to the other side. This condition occurs most frequently during the first flight in the spring, particularly when the bees have been wintered indoors under unfavorable conditions. Another occasion for drifting is when bees are moved from one location to another in the summer. There is also, in rare instances, a tendency to drift when a swarm issues and returns again. The bees of such a swarm scatter somewhat into every hive in a row, etc. This latter, however, does not come properly under the occasions for drifting, although we will consider it later.

To remedy the conditions given we must find the causes—the principal one, in my estimation, being excitement on the part of the bees so that they do not mark their location as they leave the hive, and move, therefore, toward a stronger attraction elsewhere, which attraction generally consists of flying bees or clustered bees that are visibly attracting others to them.

Another cause is the wind, which may blow the bees to one side of a bee-yard, and, as they recover control of their motion, they collect in front of the most convenient hive, and the one manifesting the most life, having forgotten or lost their own entrance; and as the flying bees increase in numbers, others keep coming. This is particularly true when colonies are set out of a cellar after having wintered poorly, when the consequent rapid changes of conditions from inside atmosphere to the outside increase the excitement of the first fly. The proximity of one hive to another has an important bearing on the matter, as does also the order in which the hives stand, the bees of hives standing in rows being perhaps more likely to drift.

MOVING BEES.

When bees are moved from one location to another during hot weather, to a new pasture for instance, so that they have been confined to the hive, they get excited, especially if they are confined when it is light, and if, during the day, the hives are opened, the bees are quite likely to drift—perhaps in several ways. The end of the row at which the hives are first opened is the end toward which they naturally turn. After that, unless enough time has elapsed so that the first uproar has quieted down, within moderation at least, one may open the hives anywhere, and yet the bees will keep drifting toward the end where the first and greatest excitement is, although they may follow a row. The principle in drifting appears to be this: A temporary excitement causes the bees to forget the instinct of returning to the place they left, so that they are drawn to the new home by other interests. It is always a question in my mind as to whether bees would not return to their own hive if the conditions were unchanged since the last flight. By this I mean that, if every colony is set out from the cellar and placed on the stand occupied last year, would not the bees, after an excited flight, be more likely to return to their own hives? Or if, after colonies are moved in the summer, would the bees have less tendency to drift if the hives are set in the same relative position to themselves and the other objects?

REMEDIES FOR DRIFTING.

In setting out colonies in the spring, if the cellar can be well aired the night before, and the hives set out before daylight, on a day when it is no warmer than necessary for safe flight, and preferably on a cloudy day, if warm enough, the conditions are not favorable to drifting. The fewer colonies set out at one time the better, and the further apart the hives are placed the less the bees are attracted by other colonies. If a bee-keeper does all in his power to secure these conditions I think he has done his best. I have said nothing about securing ideal wintering conditions; for if a bee-keeper has not already attended to this there is no use in suggesting to him any thing of the kind, for it is too late.

Some may ask how they can secure all the above combinations; but it is not for me to say how, for, as in many other things, we have an ideal or pattern, and our skill and experience must aid us in attaining to it.

When colonies are moved I like to set the hives on their new stands during the night. Then after the entrances are opened the bees quiet down before trying their first flight. In my experience this has always prevented drifting. When this can not be done, an excellent plan is to sprinkle the bees well with water before the hives are opened; and if they get a light shower bath as they come out of the hives, all the better.

DRIFTING OF BEES FROM A SWARM.

Jacob Alspaugh once said to me that if the hives were close together he would prefer not to clip the queens' wings, for he would

rather lose an occasional swarm than to have the returning bees of a swarm from a hive with a clipped queen scatter, as they often do, into other hives, so that, if these other colonies are strong, they too are likely to get the swarming impulse. Mr. Alspaugh said further that he had marked quite a number of hives into which bees from returning swarms had entered, and these colonies soon wanted to swarm. The only way in which I can explain the action of the bees of a normal swarm, when returning on account of having a clipped queen, and entering other hives, is that there is a stronger attraction than that at the old home. In such cases the bees seem to be determined not to go back to the old location.

Brantford, Can.

WHITE-CLOVER PROSPECTS.

A Bumper Crop Predicted for 1910; if the Clover is in Good Condition Nov. 1, of any Year, Prospects for a Honey Crop are Favorable for the Following Season.

BY VIRGIL WEAVER.

[Mr. Weaver is the man who predicted a scant white-clover honey-flow in 1909, and who, in spite of the opinions of nearly all of the writers to the contrary, held to his prediction until the season proved that he was right. He believes now that, in most localities at least, there will be a record white-clover yield in 1910. In view of his past record, the following article deserves careful attention.—Ed.]

I began bee-keeping in 1893. I had read Root's A B C, Doolittle on queen-rearing, the bee journals two years, and had studied bees nearly all my life. I ordered 25 hives from the Root Co., and purchased ten colonies of black bees in box hives; transferred them to eight frame hives, and patiently waited for the honey-flow. Very little clover showed up; no honey was harvested; so by studying the bee periodicals closely I came to the conclusion that the clover had winter-killed. When 1894 came I had 17 good colonies. We had a very mild winter, so felt pretty sure that the honey-flow would be good. The conditions in the spring being very favorable for the growth of white clover I could not see why the honey failed. Then 1895 and 1896 gave the same results. Four failures in succession reduced my bee fever to the 80's, and I was just about ready to give up. One thing I had noticed was that, preceding each of the years mentioned, it had run from very dry to moderately dry, especially in July and August. The year 1896 changed the program exactly. We had a dry spring; July gave a rainfall of 8 inches; August more than 6, and September was very little better, giving about 5 in. The winter following was about normal; the spring of 1897 was very favorable, and the honey secured from white clover averaged 150 lbs. per colony. The year 1898 gave 100 lbs. per colony, and 1899 gave 300 lbs.; the winter of 1898 was the coldest on record in my locality, zero weather extending into March, freezing and thawing continually. This 300 pound yield after so severe a winter was a little

contrary to the teaching of most of the old bee-keepers, and right here I began watching for the combination that it took to make a honey-flow from white clover. Prior to this time I shared the opinion of other bee-keepers, that conditions are nearly always normal for a yield from white clover on Nov. 1, and that the winter months virtually control the honey-flow. But by watching very closely, and also studying Weather Bureau statistics, I have learned that, if white clover is in a normal condition Nov. 1, it is also in a normal condition April 1, and that the winter months have no more to do with the white-clover honey-flow than Adam's off ox.

On May 9, 1907, I wrote an article for this journal, telling the bee-keepers of the northern part of the white-clover belt that there would be nothing doing in the white-clover line that year, but that in my locality, and the southern part of the white-clover belt, our prospects were good for a flow. That year I sold 22,000 lbs. of honey from 180 colonies of bees. To bear my former statement out, N. E. France said that he could count on his fingers all the parties who had a honey-flow that year. In the spring of 1908 I made no honey forecast, because, being located on the southern side of the white-clover belt, I was hopeful of getting some of my honey off at the high price before the deluge came from the North—something I was mistaken in. In February 1909, I had another article, telling the bee-keepers that east of the Mississippi River there would not be a tenth of a white-clover crop that year; but didn't Miller, Root, Doolittle, Hand & Co. do me up! What was the result? The editor, after bringing in Canada, which gave a yield from alsike clover, and including all the alsike and sweet clovers and basswood honey, said that there was from 25 to 50 per cent of a white-honey flow. Now, if you will except the above-named sources it is a serious question in my mind whether there was a single carload of surplus white clover honey gathered from the Mississippi to the Hudson River.

Now I have a different story. Instead of no honey, I want to say that there will be a bumper crop this time in most of the clover belt east of the Mississippi River. When I say "white-clover belt" I mean those localities where white clover grows spontaneously. The best of these localities are the Blue Grass sections of Kentucky; Ohio, Indiana, Illinois, Missouri, Iowa, Southern Minnesota, Southern Michigan, and Southern Wisconsin—Iowa and Northern Illinois being the heart of this belt. Draw a line from Dubuque, Ia., to Springfield, Ill., thence to Indianapolis, Ind., thence to Louisville, Ky., thence south; in nearly all the white-clover belt east of this line the white clover is in a normal condition; i. e., a crop of white clover started from the seed in the spring of 1909 which grew continually, caused by a surplus of rainfall, and, under favorable conditions, will produce one of the largest honey-flows on record in 1910. The honey crop for 1910 now depends on normal rainfall and sunshine,

after May 15, not on the amount of snowfall or freezing and thawing we have during the winter months. The snow helps in just this way: It leaves the ground with plenty of moisture in it in the spring, thus inviting more moisture when the clover has got to have it. The condition west of this line is just this. The clover here was cut off from moisture about July 10, and has set only a moderate amount of embryo blossoms to bloom this year; and the best that can be hoped for in this section is a moderate yield. The reason I say this is that July and August are the most important months in setting embryo blossoms for next season's crop of honey; and the greater the rainfall in these months, the larger amount of embryo blossoms set. At this period the other grasses are taking a kind of rest. Blue grass has set its crop of seed; the meadows have been shorn by the mower, and have not started yet on a new crop of fall growth, thus giving a crop of new white clover a chance to spread itself, which, with plenty of moisture, it certainly does to a king's taste. In a great many places of this section the rainfall almost vanished after July 10—Cairo, Ill., for example, giving but a trace of rain for August. West of the Mississippi and South of the Minnesota line conditions are not very favorable for white-clover honey. Iowa is hit hardest, as there are whole counties in that State that will not produce a pound of surplus white-clover honey this year. I have no government data covering Missouri and Kansas; but through an unofficial source I have learned that a good part of these States were hit hard by fall drouths in 1909, there being about seven weeks without rain, beginning July 10, in large areas of this section. In Missouri, as there was no honey last year to speak of, and where the rainfall was excessive until July 10, there ought to be some honey this year. I want the snow-honey fellows to watch Iowa this year. The ground there in most parts of the State has been covered with snow since Dec. 1, and I say that there will not be half a yield from white clover in that State in 1910. Snow does not set embryo clover-blossoms. It takes a temperature from 75 to 90 degrees, and from three to six inches of rainfall per month to do the work.

I will now tell what kind of weather we need to make a bumper crop of honey in 1910. As I have said before, wherever the clover is in a normal condition Nov. 1, it will be in a normal condition April 1. To get best results after April 1, could I have my own way in my locality I would have good rains to soak the ground thoroughly as soon as warm weather comes, the last rains to be May 1; then I would have three weeks of dry weather—this to make the clover fill the ground with feeders to gather plant food and moisture; then I would have good rains to soak the ground thoroughly again; also as much as an inch of rain every eight or ten days; then we would see the greatest yield from white clover that any combination of circumstances could make.

Now, it may happen that, where the clover is not in the best condition now, conditions will be good for a honey flow; and where conditions are most favorable now for a lack of or from too much moisture, it may cut the honey flow short: but taking conditions as a whole, to have clover in a normal condition Nov. 1 is five points out of ten in securing a honey-flow.

In speaking of a normal condition for white clover, there are two conditions where clover is in a normal condition, one which occurs but about one year in five. It occurred in my locality in my 17 years of bee-keeping as follows: 1897, 1902, 1906 and 1910. At Dr. Miller's it occurred 1897, 1903, 1908, and 1910. Now, as it will be two or three years before this condition can occur again it makes it for the two locations about one year in five as stated above. This condition is a crop of white clover, the greater part of which has started from the seed the year previous, and has covered the ground thoroughly with plants that are in the best condition that it is possible to put them in. These are the plants that, under normal condition, in the best of the white-clover belt, will yield honey for three months. The other condition, which is also a normal one, but which at Dr. Miller's, or, in fact, all the best of the white-clover belt, will not produce under the same climatic conditions more than half as much honey as the condition first mentioned. It is where these plants started from the seed in 1909, and have developed a greater part of their blossoms in 1910. Then these plants set new plants from their runners, and these new plants set new embryo blossoms that blossom next year, but the bloom period being about half as long the second year as the first. This will continue for a year or two, then they fall down from overcrowding or drouth. In my locality clover never fails from overcrowding. As I am on the extreme southern side of the white-clover belt our soil is not as strong nor as well adapted to white clover as it is north. There is no combination of circumstances in my locality that will make white clover yield honey later than July 10, while in the best of the clover belt it will yield honey for three months or more.

Richmond, Kentucky, Feb. 28.

SUPPLYING NEEDED STORES IN THE SPRING.

Pouring Syrup into Empty Combs Instead of Feeders; some Advantages of the Plan.

BY G. F. O. HIBER.

More than twenty years ago, when Dr. Miller wrote "A Year Among the Bees" he gave in that book his plan of feeding by filling empty combs (regular brood-combs), with sugar syrup and putting them right in the hive. The doctor pointed out that in this way one always has plenty of feeders; for if all the combs are full there is no neces-

sity for feeding; and if they are empty, there are plenty of feeders, of course. He cautioned his readers against allowing any excitement that might bring on robbing, and advised inserting the combs late in the day so that by morning, every thing would be cleaned up. In his later book, "Forty Years Among the Bees," I note that he has abandoned comb feeding, and uses regular feeders instead.

For fall feeding, when one wishes to feed a large quantity quickly the feeder plan may be the best; yet for both fall and spring feeding I still think the combs are the most satisfactory. There are never any feeders lying around in the way and I am never bothered by leaks when I put them in the hives, caused by shrinkage, etc. The real value of feeding in the combs is in the spring. It very often happens that I have a number of colonies that are short of stores when they come out of winter quarters. I realize that it is better to have them fed sufficiently in the fall to last until fruit bloom; but although I have tried to provide sufficient every fall, I have not yet succeeded in having all colonies come up to fruit bloom without more or less feeding. By the way, I do not know how we can make colonies grow any faster than by giving strong colonies an abundance of stores, so that they will never be short during the breeding period preceding the flow. Many times I have lost money by allowing good colonies to go through this trying period a little too near the "pauper line," for just as surely as the sun rises, the queens will slacken their egg laying if the honey is getting scarce and no more is in sight.

I have done but very little real stimulative feeding—that is, feeding a little every day or every other day. I do not know whether this would pay me or not; but if a colony is short of stores in the spring I usually insert two combs of two-to-one syrup, which will amount to six or seven pounds. I do this toward evening, and then, a week or so later, I can repeat the process if necessary. If I have any dark honey I use it up in this way.

I realize that the strain of bees is important; but providing an abundance of stores during the spring months, or at any time when colonies are being built up for an anticipated flow, is important too. It may be urged that filling the combs is too much work; but it is not when one learns how to do it. Dr. Miller, in his first book, described his way of filling the combs by pinching the bottom of a can full of holes and holding this full of syrup over the combs to be filled. I usually follow a method of my own, and it is much shorter than one would think. The syrup should be warmed to about 120 degrees Fahr. I use a large dishpan over which the comb may be inclined at an angle of about 45 degrees, and dip up the syrup with the cup and pour it into the cells, holding the cup about a foot from the upper end of the comb. As the syrup runs down the comb the cells are filled more or less. Then

I keep working down with the cup with a sort of drenching motion, turn the comb over, and repeat the process on the other side. I place the filled combs in a hive-body which stands over a large pan. I never timed myself, but I can fill fifty combs in a very little while.

The colonies that I want to feed are previously marked, each hive being marked with the number of combs needed, and the space for such combs left in readiness. Toward evening, with a smoker, I quickly insert the combs and cover every thing up warm. I have found that bees will take syrup from combs when they will not work in a feeder on account of cool nights. If I had only twenty five or thirty colonies I might take the time to fuss with feeders; but with a larger number it is much quicker and easier to feed in the combs. The more fussing there is to the work of feeding, the more one neglects it. I usually make the syrup a little heavier than two to one; perhaps it is often as thick as three to one. Even in the spring I think it is a good plan to have the syrup at least as heavy as two to one.

Randolph, N. Y.

ITALIANS COME OUT IN COLD WEATHER MORE THAN THE BLACKS.

On cold days the Italians are out at work when the blacks are not. On these cold days take some of them to the fire, and they will crawl as soon as they are warm. There is not a week here but that bees can work in winter; but the Italians try to work when they can't get back safe. Some get back home, but fall in front of the hive. If they are warmed they get over the cold; but if not they die.

Hamburg, La.

F. M. MORGAN.

A FLOOD FOLLOWED BY COLD WEATHER; BEES FROZEN TO DEATH.

On the 15th of November we had very high water which overflowed the bottom lands. I had my bees up on trestles high above the water. I couldn't take them down on account of the still threatening flood conditions. Then there came a sharp freeze while the river was high, and threatening. It turned so cold that ice was $\frac{1}{2}$ inches thick over the ground. I find my bees are all frozen to death. What had I better do with the combs—melt them into wax or try to get bees and queens and put on them in the spring? I had only eight hives, the flood of 1908 having washed away 35 for me.

AMOS PIATT.

[If the combs are reasonably good we would advise you to buy bees and put on them in the spring. If they are old or crooked, or the frames are poor or a misfit, melt them up.—ED.]

HAS ANY STOCK BEEN STUNG AT WATERING-TROUGHS?

I wish to inquire if you have ever known of a case where bees that have frequented the feeding-troughs of swine had gotten in the feed, been swallowed with it, and in turn had stung the mouth or throat of the pig, causing complications that resulted in the speedy death of the animal. Or have you ever known of pigs given orchard range being killed by the stings of bees that had been eaten along with the fallen fruit?

Aiken, Md., Feb. 19.

J. FORD SEMPERS.

[We do not recall a single case where any animal—horse, cow, or pig—received a sting in the throat when drinking water at a trough that bees frequented. Even if the animal were stung in the mouth we doubt very much whether any serious consequences would follow. Neither have we known of any case where pigs given the range of an orchard had been stung from eating apples that the bees were visiting. If any of our readers know of a case of this kind, will they please report?—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

SHIPPING CARLOAD AND LESS THAN CARLOAD SHIPMENTS OF BEES.

We intend to move to Salem, Oregon, about March. We have about 85 colonies of bees; and as we could not dispose of them here to good advantage we will take them, together with supplies. I should like some advice as to packing. Would it be safe to remove both bottom-boards and cover, using screen securely fastened on, and leaving an air-space between hives, say of one inch? Would it be necessary for some one to go with them, or are they just as well if packed well? The railroad companies say they can not give a pass with the car.

Can you give me any information about Oregon, west of the Cascades, as to honey production?
Chatfield, Minn., Jan. 31. E. MONETTE, JR.

[We would not advise you to try to ship only 85 colonies of bees by freight from Minnesota to Oregon unless a man went along with the bees. If, however, you are going to send a whole carload of household goods, and the bees can be accommodated in the same car, it might be practical to ship the bees, if there were no transfers, even if the man did not go along; but it is better to have some one present with the bees to give them water occasionally if the weather is a little warm. Usually it is not practical to ship less than a whole carload of bees by freight. The western freight classification requires that a man who accompanies a carload in this way pay regular passenger fare, at the same time sign a contract releasing the transporting railroads from all liability from any injury to passenger riding on such freight trains.

If you ship the bees in March we would advise using only just a screen on top. This should be nailed on a two-inch rim of the same dimensions as the top of the hive. This is for the purpose of giving clustering room under the frames.

Frames, whether self-spacing or unspaced, should be securely fastened in the hive by means of wedges. Hives should be loaded with the frames parallel with the rails. But before putting the hives in the freight car, four or five inches of loose straw should be thrown on the car bottom, hives laid upon the straw, and then secured to each other and otherwise braced in the car. We never advise shipping bees by local freight unless they can go right straight through without transfer to point of destination, and not take more than 48 hours. Even then the hives should be cushioned on straw and securely braced in the car.

When a man goes along with the bees he should be provided with a water-pot, and water the bees every now and then, if they are clustered tightly over the wire cloth. When the car passes over the mountains, loose quilting or something should be laid over the top of the wire cloth to prevent the bees from getting too much chilled.—ED.]

ABSORBENTS VERSUS SEALED COVERS.

I have read the article in GLEANINGS for Feb. 1 by L. C. Wheeler and your reply. Before the winter closes I wish you would try an experiment; but first I will tell you how I pack my bees for winter.

Over the frames I spread a piece of burlap, and on this I set a chaff tray made like a super, of four-inch lumber, with a piece of burlap tacked on the bottom. This is filled with planer shavings, and they are heaped up in the middle so as to be thicker directly over the cluster.

Last winter I saw the difference between a cushion and one of these trays. When I packed my bees for winter in October, 1908, I was short of trays, so I put into a burlap sack enough shavings so that, when it was spread out over the top of the frames, it made a cushion about four inches thick. In February of last year we had a very warm spell that followed a very cold spell of weather; and when I looked at this hive that had the cushion instead of the tray I found that the cushion was wet and frozen around the edges, and the frames below were damp and moldy. None of the other hives that had trays were that way. I took this cushion off, put on a chaff tray, and in about a week, when I looked again, the hive and packing were dry. I use the Hilton and the Woodman hive, and can see no difference in wintering. The Hilton has thicker walls, but the Woodman is made of heavier lumber.

I wish you would have two or three of these chaff

trays made, and put them on the hives that have the wettest cushions, and see if they get wet like the cushions.

The top layer of shavings directly over the cluster is usually a little damp—much more so with some colonies than others; but the hives are dry and clean in the spring, and our winters are long, and the snowfall is usually heavy—especially so this year.

Benzonia, Mich., Feb. 5.

JOHN A. VANDEMAN.

[In our reply to Leon C. Wheeler we did not explain that we were using chaff trays, the same as you are, and that we had been using such trays for many years back. If you were to carry the experience a little further you would find there would not be much difference between a loose chaff cushion, fitting on top of the hive, of a suitable size, and a chaff tray. The only merit of the tray, in our judgment, is that it is a little neater, and makes a little better contact on top of the hive. As usual we are trying several different ways of wintering, using sealed covers and absorbing cushions as well as trays. The result of the experiments will be given in the spring as heretofore.—ED.]

BEE-KEEPERS' INSTITUTE IN SYRACUSE, N. Y.

On Wednesday, Feb. 9, a bee-keepers' institute was held in the City Hall, Syracuse. This was one of a series of institutes provided for by the State Department of Agriculture to be held in different places, and it proved to be very helpful and interesting as will be seen by the following program:

10 A.M.—Out-apariers, Charles Stewart, Johnstown.

Value of the Italian Bee, M. Stevens, Pennellville.

Sectional Hives, S. D. House, Camillus.

1:30 P.M.—Question-box.

Early Experiences as a Bee-keeper, O. L. Dines.

Wax-rendering, Mr. Stewart.

Bee Diseases, Mr. Stevens.

7:30 P.M.—Question-box.

Wintering Bees, W. D. Wright, Altamont.

Comb Honey, How to Get it, N. D. West, Middleburg.

Production and Sale of Extracted Honey, I. Kinyon.

The morning and afternoon sessions were conducted by Mr. Charles Stewart, of Johnstown. The discussions were directed in such a manner as to bring out the essential points without loss of time, making a live meeting all the way through.

The subjects were well presented, and brought out considerable discussion. Sectional hives, wintering bees, and bee diseases, seemed to arouse the most interest; and in the discussion of bee diseases especial emphasis was placed on the value of the Italian bee as the most important factor in combating black brood.

The evening session was conducted by Mr. N. D. West; and his talk on comb honey and how to get it was given in the convincing manner of the successful veteran producer.

Medina, O.

JESSE A. WARREN.

IS JAPANESE CLOVER A HONEY-PLANT?

Some time ago I saw in GLEANINGS something about sowing seed of the little Japanese clover for bee pasture. Now if it is what is called Japanese clover here, it doesn't amount to anything for bee pasture. There are hundreds of acres of a plant by that name in reach of my bees, but I rarely see a bee on it. It is an annual, makes a green carpet late in summer, and blooms in September. If it yielded nectar my bees would surely get considerable. It will take to meadows in places, but most of it grows along roadsides and on slopes outside.

Fremont, Mo.

MRS. ALMEDA ELLIS.

[Nearly all honey-plants will fail to yield honey in some localities, and yield profusely in others. For instance, the great honey-plant alfalfa, that produces hundreds and hundreds of cars of honey in the irrigated West, yields practically no honey in the Eastern States. The same is true of a large number of other plants. It is possible and even probable that Japanese clover is not a yielder of honey.—ED.]

WHITE CLOVER CAUSING BLOAT IN CATTLE.

In GLEANINGS for Feb. 15 you ask for information in regard to white clover and bloating. In reply I will say that bloating from white clover is not an uncommon occurrence. During the early summer, when growth is heavy, and when it is wet, care has to be exercised when grazing. Cattle put on such pastures about 10 or 11 o'clock, and taken off at 3 P.M., when the clover is dry, are not in so much danger. Violent exercise, or sticking with a knife to let out the gas, is the usual remedy. I believe that alike, under the same conditions, would do likewise.

Lexington, Ky., Feb. 21.

L. E. HILLENMEYER.

OUR HOMES

By A. I. ROOT.

The voice of one crying in the wilderness.—JOHN 1:23.

Where end is destruction, whose god is their belly, and whose glory is their shame.—PHILIPPIANS 3:19.

Some of you may be tempted to think me irreverent, dear friends, when I tell you I have long felt that Terry, Fletcher, Sinclair, and perhaps a few others, were in some respects like John the Baptist who kept up his "crying in the wilderness" until the sinful world not only stopped to listen but came to him from "all the region round about," asking what they must do to be saved. Of course, John's message was to a *sinful* world, while T. B. Terry's is mainly to a *suffering* world; but sin and suffering are so closely connected it may be hard to separate them.

I suppose the readers of GLEANINGS have all read the matter on the back cover of this journal for Jan. 15. If you have not, I beg of you to get it and read it at once. Of course, it is an advertisement; but after having read it over several times I decide again it contains a story of more real value to humanity than any advertisement I ever saw before in my life. It was reading this that prompted me to tell you something of what I know of T. B. Terry.

Years ago, when I first began to be really interested in high-pressure agriculture Terry was invited to speak at a farmers' institute in Medina. He gave us a potato talk, and the recital of his experiments and final successes took such a hold of me that I almost insisted he should at once put it into book form. I need hardly tell you that this book proved a boon to the farming world. A big moral comes right in here. Terry raised more potatoes, and better ones, because he made potatoes his express business in life. He seemed to recognize in the outset that, to lead the world in any thing, the enthusiast must have "elbow room." I wonder if our young bee-keepers (and some of the older ones too) are listening. To make a real success in any thing you want to be untrammelled. People laughed when Terry said he didn't want a chicken or a pig on his premises. I believe he also went so far as to say he didn't want a garden. He said he could make his money with potatoes and take this money and buy his eggs, garden truck, etc., cheaper and easier than to try to grow every thing as so many farmers do. All the stuff he wanted passed his house every day, and the neighbors were glad to supply him. Well, potatoes must have heavy fertilizing in some shape, and he soon decided clover turned under was the cheapest and best manure, and he therefore bent all his energies toward getting bigger crops of clover than anybody ever saw before. You perhaps know he has given his clover talks at various farmers' institutes all over our land. To make a proper rotation of crops, wheat came in the same way, and he soon

sold all the wheat he raised in this way, at a big price for seed because it was better and *cleaner* wheat than could be found in the market. As an illustration, he and his help once spent a whole day in hand picking over his seed wheat in order that he might keep his beautiful farm free from foul weeds. I think they got less than a teacupful of weed seed; but he considered it time well invested. He never used poison on his potatoes, because he hand-picked the mother bugs before they ever had time to lay any eggs, and the work cost him less than the Paris green.

He did make one digression in favor of strawberries. Something or somebody suggested that wonderful berries could be grown by turning under that heavy clover sod; and as an experiment, he, with the aid of his good wife and children, raised more and larger and better berries than were ever seen before in that region. Of course they brought a big price, and he saw at once there was far more money in the berries than in potatoes. Why didn't he start a strawberry farm and get rich?

Now, here is another beautiful moral. Terry's mission in this "wilderness" of sin and suffering was not in order that he might *get rich*. I, in one of my visits, talked the matter over with him. If he went into strawberries it would interfere with the education of his children, with his talks at farmers' institutes, with his being of benefit to the world at large; but he *did*, at my solicitation, write the strawberry book, that has also proved a blessing to humanity. As somebody has said of Prof. Holden, the "corn wizard," the man who put corn on the witness stand and made it "stand up and answer questions," Terry made potatoes, clover, wheat, strawberries, etc., stand up and answer questions in a way they had never done before since the world began.

Please pardon me if I refer *once more* to Booker Washington. When he got to the point where he could thank God that he was born black instead of white he said he was a happy man. I do not know that Terry has ever thanked God that he came so near the verge of the grave, but I think he might do so. Had it not happened, the world would not have had this book.

Not only did Terry make potatoes, clover, and strawberries "stand up and answer questions," but he did the same thing with his domestic animals; and his book, "The Winter Care of Horses and Cattle," was the outcome of this. The beautiful heavy farm team that carried the immense loads of potatoes to market were grown and fed on Terry's clover hay, without a particle of grain. His neighbors said it wasn't *hay*—it was just "*wilted* grass and clover." By the way, I wouldn't wonder if the world, at least a part of it, has had better clover hay since Terry's books have been published than they ever had before. Some credit, at least, is due your humble servant for having these books given the world. When Terry made such a sensation with his "clover sod" strawberries I urged him to put it in book form. He

objected, saying he was only a beginner. But I said, "Mr. Terry, you must write it *now*, when you are full of enthusiasm on the subject." He did so; and when he came to revise it, years after, he admitted I was right about it.

Well, a year or two ago I urged him to put in book form his explorations and discoveries along the line of getting out of the darkness and into the light by better ways of living, etc. For quite a time he declared he had no time, with his extensive correspondence, etc. I continued to urge, however, and I gave you notice on these pages when he started on the task. The above explains partly why I am so deeply interested in Terry's books and teachings. No matter where I travel, whether in Northern Wisconsin or Southern Florida, I come across people who tell me with enthusiasm that "Terry's teachings" have given them not only a new lease of life but a substantial addition to their pocketbooks by his simple diet and other sensible advice. With this long preface I wish now to review somewhat the book that is having such a generous welcome at the hands of the great public.

If ever there was a book written especially for our homes this is the one, and I am sure no other book has ever appeared that covers the ground this one does. The opening chapters are devoted to giving the homes of our land more and purer air than the world has ever had so far—not only pure air, but cool or cold air; and last, but not least, *moist* air. It is a little singular, but all makers of incubators are just now coming to the conclusion that this same moist air is one of the great essentials for the success of the incubator. Terry's "humidifier" for keeping the air of the average home always moist is almost a revelation to a great part of the world. Then follow some chapters on breathing and having the clothing so that the whole body has every possible chance for taking in such quantities of this pure moist air as God intended we should take. Next to the air we breathe comes the water we drink, and the reason why we should drink *lots* of pure water. I might go over the whole book in this way; but I want you all to read the book; and if you once start in you will be sure to read it all, for Terry's very plain familiar way is really enticing. Our own copy has been all around our neighborhood here in Florida. Neighbor Ten Broeck took it Saturday night and returned it Monday morning *read through*.

Now, friends, please do not get the idea that Terry is absolutely right about every thing. If so he would be more than human. There is, however, *so much* in the book that commends itself to *good common sense* we can afford to overlook what seems to us a mistake. I think he is a little too severe on the average family physician; but we all know good honest doctors are *all* getting on "higher ground" of late. Again, I believe that vaccination, as a rule, is a boon to humanity; the same with surgery for appendicitis, etc. If Terry's plan of living *will* obvi-

ate the necessity of all these things, then of course I shall be right with him.

In choosing my two texts I had principally in mind the sin of overeating—living to eat instead of eating to live, and I do think Terry's vehement protests against banquets, picnics, overloaded tables of rich viands, *everywhere* and *anywhere* are really "a voice crying in the wilderness" for a reform that is needed, and needed *tremendously*.

Now, I know of no more fitting windup for this Home talk than the following which I clip entire from the *Country Gentleman*. You will readily see where my two texts come in; and may God's Holy Spirit go with Terry, Fletcher, Sinclair, and *this* message to the homes of our land.

THE RAW-FOOD CULT.

[Mr. Upton Sinclair, who started the packing-house investigation with his sensational novel, "The Jungle," has now discovered that the cure for all human ills lies not only in eschewing meat, but in eating nothing but raw food. Here is his account of this practice and its results, from *Physical Culture*, which he prefaces by saying that he had been an invalid for years when he adopted it.—ED. C. G.]

I have learned that it does not matter in the least in what part of the world one is—whether in the mountains or at the seashore, in Canada or in Florida. It does not matter whether the air one breathes be hot or cold, "night air" or "day air," damp or dry—provided it be fresh, and not air that some other person has already breathed. I have learned also that it is not necessary to take very much or very elaborate exercise. I gave two years of my time to doing literally nothing but trying to get well; and during that time I made it my duty to exercise nearly all day in the open air—riding horseback, walking, swimming, playing tennis, canoeing—and I was never in worse health in my life than at the end of the two years. Now half an hour a day of real scientific exercise suffices me—with a walk now and then when I happen to have some place to visit.

And it is just the same with sleeping. Now six or seven hours suffices for every thing; and in the old days, when I was told that I needed a "rest" I would sleep ten or even twelve hours. And it is just the same with working—with brain-work, I mean. For two years I did almost nothing—I didn't dare. Now I read and write and study twelve hours a day, for as long a time as I feel like it, and it never does me the slightest harm. The "overwork" business is mostly all delusion. It is not overwork at all, but overeating. It is not lack of rest, nor lack of exercise; it is overeating. It is not a debilitating climate nor a damp and "raw" climate; it is everywhere and always some form of the fatal consequences of eating unnatural foods; of eating foods that have been cooked and devitalized; foods that have been refined and deprived of their wastes, so that they stick in the intestines and clog the system; foods that have been softened and made into mush so that they slip down without chewing, and without giving one a chance to satisfy his hunger; foods that have been concentrated and concocted and combined until all the chemists in the country would be needed to tell a man how much of them he really ought to eat.

I used to give way to the claims of "hospitality" when I went to people's homes I could not bear to make them uncomfortable and to set myself apart from every body else; and so I was well so long as I stayed by myself, and sick whenever I went where other human beings were. Last winter, for instance, I spent several months in a solitary place in California, working hard and enjoying magnificent health; and then I went up to San Francisco to stage a play, and I accepted some invitations to lecture at the universities; and the boys got me up delightful suppers of fruit salads and peanut-butter sandwiches and ice-cream and cake, and other wholesome and nutritious vegetarian concoctions. So in a few weeks I was having headaches again, and then a cold, and finally wound up on the Gulf of Mexico with a "sunstroke."

In youth I had the misfortune to be fed on many delicious-tasting inventions. I lived in the South, where people are very proud of their cooking. I have said that I was brought up on a diet of fried chicken and hot biscuits and chocolate cake, and so in our home we had to have a servant. When we were in the coun-

try we had to have two, because one found it too lonely. I have no more vivid memories in my life than of these "servants"—strange and perplexing personages who came from the south of Ireland and the north of Sweden and the middle of Hungary and Japan. The Hungarian ate raw sausage and bacon; the Irish one dropped dead of apoplexy, and one from South Carolina went crazy and threw the salt-box at my mother's head.

There were times in our struggling days—many years, in fact, when we could not afford a servant, and then my wife had to be it. And when she was ill, which was about half the time, the role fell to me. So I know just what I am talking about when I discuss this question of cooking, and what it means to human beings. I have known what it is to build the fire and broil the beefsteak and fry the bacon and eggs, and peel the potatoes and shell the peas and boil the coffee and make the toast; and to sit down and stuff it all in quick before it got cold and spoiled, and then to crumb the table and put the things in the ice-box and sweep the floor and wash and dry the dishes and fill the kettle and carry out the ashes and bring in more wood; and then hitch up the horse and drive to town to get more stuff from the butcher and the baker and the grocer and the druggist, and then hurry back home because it was time for the next meal. For a long time it was worse even than that, for we had a sick baby, and the doctor had laid out an elaborate schedule for him, which included such trifles as broiled chopped meat and chicken broth and gruel and cream six or eight times a day. We have gone through with this sort of thing for weeks and months and even years; and now, as I look back upon it, it seems to me a miracle that we ever missed committing suicide, as we so often thought of doing.

And now will you stop and reflect that there are five million farms in this country, and an even larger number of workmen's homes; and that in every one of them there is some wretched slave, shut up to toil in just such a treadmill, without hope of respite for life—the men spending all of their energies in earning food and the women in cooking it; and all for no purpose, save to supply occupation for an army of doctors and another army of dentists and another army of druggists and another army of those who manufacture and advertise and sell and transport patent medicines? I have an account of the drug industry of the city of Detroit, in which it is set forth that in that city alone there are manufactured nine billion pills a year. And now bring yourself to realize that every single one of those pills represents a meal which somebody ought not to have eaten—the appalling total of a hundred meals a year for each man, woman, and infant in the country!

I have come out from all that as from a charnel-house into the bright sunlight and fresh air. I am spending the winter in the South with my little boy. We have a big house, but we should no more know what to do with a servant than we should know what to do with a white rhinoceros if President Roosevelt should send us one from East Africa. We have a barrel of walnuts in the pantry, and one of pecans; a sack of figs and one of prunes and one of raisins; and once a week the grocer-boy brings a big bunch of bananas and a box of oranges and a basket of persimmons, and there we are. Three times every day we put some of these things into a bowl and pump water over them till they are fresh and shiny, and then carry them out on to the lawn; and there we spread a newspaper into which we throw the nut-shells and the banana-peelings; and when we are all through we chuck the paper into the stove and put the bowls back in the kitchen, and our housework is all done. We have no fires and no dirt, no smells and no grease, no soiled dishes and no ice-box, and no garbage-can and no medicine-chest.

HAS MONEY FOR MISSIONS, ANYHOW.

I have been the recipient of GLEANINGS for many years, and a constant reader of the Home papers and Notes of Travel. I have been for seventeen years a Methodist minister in the mission fields of South Dakota, with an average salary of \$300, and no missionary money. I have always labored to make the people ambitious to carry their own work and also contribute of their own means to the mission fund. My prairie circuit last year, consisting of twenty-six members, furnished \$40.00 for missions. I feel called on to make this report, for I esteem A. I. Root one of my very best friends.

Bijou Hills, S. D., Dec. 31.

R. N. KRATZ.

POULTRY DEPARTMENT

BY A. I. ROOT.

UTILITY AND BEAUTY; CAN THEY BE COMBINED?

Mr. Root:—In your poultry department for Dec. 15 the heading reads: "Is it eggs and meat we want, or is it fancy feathers and a good-looking chicken?" This implies that a combination of both qualities is impossible; further, the article advocates Leghorns or Leghorn crosses for eggs and meat; if so, why Leghorns? Surely you would omit the meat clause. A Leghorn broiler is possibly a fairly good meat proposition; but beyond the broiler stage it is well to leave them out.

It is also assumed that "Leghorn" expresses egg type. Why? It is hard to find absolute authority to substantiate such claim; but at the same time it is generally acknowledged that the Leghorn is entitled to that distinction—not that it lays more eggs, but that it produces them more economically, and, as a pullet, becomes a producer ahead of other types.

It is very hard for me to believe that fine feathers and excellent type would lessen egg production or carcass value; and I thoroughly believe that the best layers in the land will be found where the stock grades the highest. Certainly some fancy drones exist in every fancy flock; but surely some drones continue their useless lives in common flocks.

Is it not a fact that the most authentic reports of actual performance can be obtained only from fanciers and specialists? Is it not true that the fancier has the best of reasons for keeping track of individual performance? and does not the fancier set a higher value on performance when the eggs produced have a highly enhanced value than does the commercial poulterer who sells eggs by the dozen?

It would interest many of your readers could they assemble as one of a bunch of real cranks—I mean the kind that dilates on barring, penciling, under-color, etc., and then hear the trap-net talk. You would soon learn that the laying quality was considered very important, and some of the records made for certain periods would make Ananias jealous of his laurels; but the fancier does not put egg production first; but at the same time that very important function is rated high, and an outstanding specimen from the fancy standpoint that is also a heavy layer is valued far beyond the reach of ordinary buyers. In fact, it is only the fancier who will pay a fancy price for a fancy performance.

I heard two fanciers offer \$2.00 apiece for every egg that one certain Barred Rock pullet would lay during the coming months of March and April. This was at the late Chicago show, and the offer was refused point blank, if that pullet turns out to be as good a layer as other Barred Rocks that I have owned; her owner turned down an offer of at least \$100 for her produce for two months. Suppose she had been a hen with an authentic record of 250 eggs for the preceding year, but she herself lacking in high-class breeding characteristics, do you think there would have been several buyers willing to take all her eggs at \$2.00 apiece? I don't. I know all the parties pertaining to the foregoing paragraph, or would not have mentioned the circumstance.

I have no wish to belittle the value of laying quality, but I here assert as my honest belief that fine feathers do not lessen the laying function, and that ordinary flocks are benefited by using high-class males; for it goes without argument that in the course of a few years the heaviest layers in a flock will have the greatest number of descendants.

Many flocks have been ruined by crossing; and advocating this method is dangerous for usually those who try it are the least capable of controlling it; and a fairly good flock may degenerate into dunghills very promptly.

All the American breeds and varieties combine utility with fine feathers, and some other classes do likewise; but Leghorn crosses are not likely to add any valuable feature to any of the popular breeds.

Sioux City, Iowa, Dec. 27.

MATT. W. BALDWIN.

Thanks, friend B., for the facts you present and for your protest against haphazard crossing. I afterward thought better of my resolve on the spur of the moment, and my Leghorns have not been crossed. In a re-

cent talk with Chas. McClave, of New London, O., he informed me that all the great layers of recent date have come from high-scoring strains of fowls. The perusal of Kellerstrauss' new book has given me faith in the results of years of careful work in perfecting a strain.

WHY MR. ROOT LOST HIS LITTLE CHICKS.

In GLEANINGS for Feb. 1st Mr. Root gave his experience with rats and other animals killing his chicks, which was really as sad to me as it was for him.

I have found it best, when buying an article of any kind that was new to me, and I did not know a'bout the thing, to read the instructions thoroughly and follow them. Mr. Root, having bought a lampless brooder, did not put his 60 or 70 chicks into it for two weeks after hatching, which was most decidedly wrong. In this case he thinks a basket and a cheap burlap covering is better, thereby showing to me that he did not have any faith in a lampless brooder until the chicks were partly grown. And when he did change the chicks from the basket to the brooder it had to be a *forced* change, because it is not a chick's nature to change its location or roosting-place.

Now, if Mr. Root had taken "my word for it," and placed his chicks direct from the incubator to the brooder, and placed the brooder out in his yard, and closed the doors up tight for twelve to eighteen hours out of every twenty-four for at least three days, he would undoubtedly have had all his chicks now. The brooder is animal-proof when the doors are shut unless they gnaw through the material. Having placed the brooder in the yard, the "prowler" would have given Mr. Root warning of its presence long before the ten days were up, at the end of which time I recommend leaving the small door open for more air, and in the meantime the chicks would have learned that the brooder was their protection from storms; and when it rained it would have been Mr. Root's pleasure to see the chicks "put" for the brooder instead of trying to catch them under such difficulties.

The best way to catch chicks is with a broom. Take it in the right hand about half way down the handle, and circle it around over a chick, just heavy enough to stop its running, and then pick the chick up with the other hand. With a little practice Mr. Root will be able to pick up one hundred chicks in five minutes.

My advice to Mr. Root is to "try again;" follow the instructions, and be happy next time. I have learned to raise chickens "just nature's way"—Mr. Root may call it God's way. I am trying to impart my knowledge to others through my instructions; and when followed it will lead to a most satisfactory success.

Chicks are prey to cats, hawks, and a large number of animals. A great many animals will go through and under a fence—the cats and hawks, over it. A good watch-dog for night and a shotgun for daytime are about the best protection for a chicken-yard.

Aurora, Ill., Feb. 10.

V. W. CLOUGH.

But, my good friend, how about that incomplete "dooryard"? Surely \$2.50 is enough to pay for a dooryard 2½ feet square and 6 in. high (*thin lumber*), finished complete. Because this is a warm climate, I sent for the dooryard so the chicks could have good ventilation on hot nights; and when I saw it was netting only overhead I was, as I have said, a little fearful. I did read, "directions" carefully, and the chicks had been in the brooder a week or more, and knew where to go. After I put on the netting *that you omitted*, the "night prowlers" tunneled clear under it and under the brooder, going under ground on one side and out the other in their frantic efforts to get the chicks. Thanks for your plan of catching chickens with a broom. I wonder if some woman didn't suggest the idea. A dog and a shotgun are probably all right; but while poultry netting, even small mesh, is so cheap, why not have your fowls, big

and little, where they can be locked up nights and still have such ample ventilation as T. B. Terry is writing about? It is worth something to me to know, when I go to sleep nights, that all my fowls, big and little, are *absolutely safe*. I know it is some trouble to go around and shut all the doors after they are "gone to roost," and then get up at "peep of dawn" and let them all out; but after a faithful trial I feel sure it is worth all it costs to make these frequent visits in getting acquainted with the chickens so you can be on familiar terms with them, aside from the security from prowlers.

DO HENS LAY IN THE SUMMER TIME IN FLORIDA?

When I was on the island I was told by the people there they seldom got eggs of any account in summer; and when I reached there in the middle of November, they said the hens had just started to lay. I have alluded to this matter before; and as a proof that that they do lay every month in the year, if properly cared for, I give below a report from my neighbor who took my fowls while I was in Ohio during the summer.

EGGS FROM A. I. ROOT'S HENS DURING THE SUMMER.

April, 1166; May, 834; June, 741; July, 683; August, 767; September, 578; October, 420. Average number of hens, about 65; average number of eggs per day, 24.

You will notice October was much the lowest on account of moulting; and, if you recall, when I arrived here in November I got very few eggs for some little time. Many of the above 65 are two years old, and a few *three years*.

FIRELESS BROODERS.

It is refreshing to note that so good an authority as *Poultry Record* has arrived at exactly the same conclusion I have already expressed in regard to fireless brooders and a brooder-house for the fireless brooder. Read the following:

For a hover for a fireless brooder I prefer a loose sagging blanket to slitted rags, as the chicks are apt to become tangled up in the rags or ravelings from them. With a sagging blanket there is no danger of this. Any one can make a fireless brooder. There are a great many patterns and some complicated affairs; but so far as I know they are no better than the simple patterns. I make mine out of cracker-boxes; pad the sides and have a warm sagging blanket attached to a frame that rests on cleats on the inside of the box. I have a pad or pillow stuffed with hay, feathers, or cotton which I lay over the frame holding the hover blanket to conserve the heat when the weather is cold. I have intake holes for fresh air near the bottom, and outlets above the blanket. It is a very simple affair, and can be made in a short time at a cost for material of from 25 to 50 cts. The brooders are so inexpensive that there is no necessity for crowding the chicks.

The expensive part of operating a fireless brooder is the coop in which it is placed. A brooder-house or colony-houses are necessary. The small low-down coops which we see recommended are not practical, in my opinion. I once used some of these coops, and every time I opened them the chicks would fly out; or when it was necessary to close them during a storm the chicks were in darkness. I then came to the conclusion that, to raise chicks with any kind of brooder, it is necessary to have it under shelter where the attendant can get in among the chicks.

GLEANINGS IN BEE CULTURE

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EDITORIAL

By E. R. ROOT.

THE plan suggested by Mr. O. B. Metcalfe, one of the firm of Metcalfe & Parks, extensive honey-producers of New Mexico, for securing a wire to the end of a needle, seems as if it might be a good thing. We shall be glad to get reports from others who may be in position to try it.

ATTENTION, OHIO BEE-KEEPERS!

OHIO bee-keepers, if they have not already done so, should write at once to their Senators and Representatives, urging them to support the Patterson foul-brood bill recently introduced in the Senate. There is every thing to show that the bill will pass both houses, and receive the signature of the Governor, *providing* Senators and Representatives are urged to vote for it by one or more of their constituents. It is up to you Ohio bee-keepers to write at once if you have not already done it. The full text of the proposed law was given on page 171 of our last issue.

SPRAYING, AND THE RELATION OF BEES TO FRUIT.

By the time this journal reaches our readers, spraying will be in progress. In most States there are no laws against spraying at any time; but in the majority of cases, progressive fruit-growers do not spray until before and after blossoming time. They know that spraying destroys many of the delicate parts necessary to get good fruit, and that the time to do the work is before the blossoms come out and about a week after the petals—that is, the white bloom—have fallen off.

Of course, the mixtures of lime and sulphur washes and the oil emulsions to destroy the San Jose scale can not harm bees. It is the arsenites designed to kill the codling moth that do the mischief. Metcalfe & Parks, of Mesilla Park, New Mexico, lost last year very heavily because the fruit-growers in their vicinity insisted on spraying their trees when in bloom. All who are situated as Metcalfe & Parks are should begin a campaign of education. Secure bulletins from the experiment stations, mark them, and turn them over to the fruit-growers. F. A. Waugh, one of the best authorities on fruit culture in this country, and

author of a number of excellent books on fruit culture, advises against spraying while trees are in bloom. See what Mr. Waugh has to say in next issue.

Nature has designed that bees shall perform a very important work in pollinating fruit-trees. That, of course, means more and better fruit. Many varieties of fruit are sterile to their own pollen. This is especially true of some apples, pears, and plums. The wind, as the article in this issue shows, will carry the pollen but a short distance. Therefore it seems that nature designs that insects (and that means bees) shall perform the important work of cross-fertilization. Darwin, Fletcher, Waite, and others have shown conclusively that nature seems to abhor self-fertilization, and seeks the pollen of *other* trees and plants. This explains why many fruit-growers are asking bee-keepers to put colonies of bees in their orchards. They know that the presence of bees helps to secure more and better fruit.

WINTERING AS REPORTED FROM DIFFERENT PARTS OF THE COUNTRY.

THE reports are very conflicting, sometimes even from the same locality. For instance, one of our correspondents from Nebraska reports heavy losses everywhere, while another one there says the bees never wintered better. As nearly as we can gather, winter losses are confined *mainly* to localities such as are found in Southern Ohio, Northern Tennessee, Southern Illinois, and along about that latitude. Further north, where the bees are mostly in double-walled hives, and were fed in the fall, there appears to be comparatively good wintering. In nearly all the cases of cellar wintering reports are favorable. In most of the Northern States where it has been very cold, and there has been a large amount of snow, the wintering has been good providing that bees have been well housed in double-walled hives well packed. In nearly all cases where they have been left in single-walled hives with honey-dew stores, the losses have been very heavy. In what is ordinarily understood as the Southern States, presumably the wintering has been good. The only danger in that part of the country is starvation.

LOCATING AN APIARY.

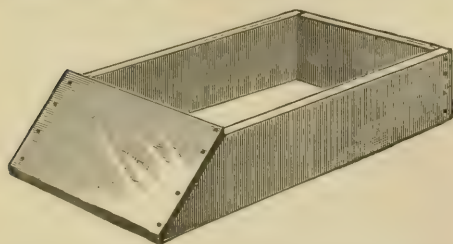
ABOUT the time this issue reaches many of our subscribers some of them will be locat-

ing their yards. A few suggestions at this time may not come amiss.

First and very important, do not put an apiary near a line fence, especially if that fence is or will be next to a cultivated field. It will be well for the bee-keeper to locate his bees as remotely as possible from his own cultivated fields; and if he owns a town lot he should put them clear at the back end of it, as far away from the highway as possible.

Generally speaking, hives should face the south; but there are times when it may be necessary to have the entrances face in different directions to avoid confusion on the part of the bees, especially if the hives are arranged on the group plan. For instance, we consider it poor policy to place four or five hives in a row, facing in the same direction. There is almost sure to be confusion, loss of queens, and danger of strong colonies drawing from the weaker ones. One can locate three hives in a group, all facing the same way; but we would not go beyond that number. If there are five hives in a group we advise the arrangement shown in the diagram below, the dot indicating the entrance. The three hives should  face the south, and the other two  east and west. We would advise having the groups irregular as to size. In one place we would put two hives, in another three, and in another five. Then we would go further and pick out distinguishing objects such as a clump of bushes, a little tree, or something of the sort that would differentiate one group from another. We regard it as very important to place the hives so that each entrance will have an individuality of its own. This is quite important when young bees and the young queen come out for the first time.

As we go over the country we find a good many bee-keepers locate their hives directly on the ground. Such a policy is destructive to the hive-bottom, and the hive is too low down to work over to advantage. We do not know of any thing better than a hive-stand made of rough lumber on the plan shown in the accompanying illustration. If



you do not wish to buy them of the dealer, go to your planing-mill and get the cheapest and poorest stuff you can find that will hold a nail. The front board should slope from the ground to the entrance. This is very important in the spring and fall of the year, and during the height of the honey-flow. While the lumber for this hive-stand is cheap, if properly nailed it will hold the hive proper off the ground for ten or even twenty

years. The bottom edges may rot, but the rotting will take place so slowly that it is inappreciable.

If the hives are arranged in groups, this bottom-board is rather expensive. In that case one could make an oblong frame, place the hive crosswise on it, then lean a board from the ground up to each entrance. Do not forget to give the bees a runway, for this will be found to be worth its cost.

The question now arises, "Shall we have shade?" This depends on locality. In hot climates shade is indispensable. The Arizona plan of shade running east and west is probably as good as any. In the north-temperate climates a little shade is an advantage; but too much is a detriment. Small shrubbery is about right. The shade of *old* apple-trees is a little too dense, while that of young trees, say four or five years old, is about right.

In some places shade-boards made of rough-sawn thin lumber projecting front and rear as well as on the sides of the hives would have to be used, possibly, during the hottest part of the season; but during very windy weather a 15-lb. stone or some other sort of weight is required to hold them on. For this reason we would prefer natural shade.

OUTDOOR WINTERING EXPERIMENTS AT MEDINA; GOOD RESULTS FROM THICK SYRUP FED LATE.

It will be remembered that last fall we packed our outdoor-wintered colonies in different ways. Some colonies had a large excess of honey-dew; others, honey-dew with syrup on top, and still others almost entirely sugar stores. Some of the colonies were fed early in the fall with a moderately thick syrup; others were fed very late with a very thick syrup, or as thick as the bees could take it.

Most colonies were under sealed covers, while some few were under absorbing cushions. The great majority were packed in double-walled chaff hives, and a few in single-walled hives were wrapped in paper winter cases and a few in wooden winter cases; other colonies on the weak order were put in the cellar in single-walled hives. For the total aggregate the percentage of loss was very light, not exceeding 3 per cent.

It will be remembered that last fall we had fears that the large amount of honey-dew that had been gathered all over the country would result in heavy winter mortality. While some reports show heavy losses, yet those losses have not been nearly as heavy as we expected.

At our south yard, where there was much honey-dew gathered, we expected the mortality to be heaviest, and it was. Five colonies died outright out of 75, and perhaps three dozen more were weak. Out of this number quite a few seemed to have dysentery rather badly. As nearly as we could ascertain, this dysentery was much more pronounced on honey-dew stores. Where a colony had been fed largely on sugar syrup,

even though fed late it came out in comparatively good condition, with very little loss.

At the Clark yard, where no honey-dew was gathered, and the bees were fed on very thick sugar syrup, there was no loss except two colonies that were very strong, and they starved. We had underestimated their strength, and consequently did not provide the necessary stores. All the other colonies of that yard came through sweet and clean. Their stores were made up of basswood and clover honey topped off with a little feeding of thick sugar syrup, along the last of November. It turned cold soon after, so that the bees could not cap these stores; and yet in spite of this the results were as above stated.

At the home yard of about 300 colonies, indoors and out, there were only two colonies that died, and that was through starvation. This was not because there were no stores in the hives, but because the clusters had moved over to one side; and on account of the long continued cold they used up all the stores on that side, and, apparently, not being able to get over to the other side of the hive, where there were stores, they starved. For the purpose of experiment some two and three frame nuclei were wintered outdoors under sealed covers. They all wintered well.

The bees at both the Home and Clark yards were in good condition—in fact, they were practically of the same stock. All the nervous and irritable bees, and all the off stock, were put into the south yard; and these odds and ends, so to speak, together with the poor quality of the stores, doubtless contributed to the comparatively poor wintering at that yard.

Bees at the north yard gathered considerable honey-dew. This was the yard where there were over 2000 queens reared last season. All the colonies were drawn on heavily for brood and bees. But the bees here wintered better than they did at the south yard, although they were not in as good condition as the bees in the two other yards. The heavy drain of queen-rearing, and scarcity of stores, doubtless accounted for this.

SEALED COVERS VS. ABSORBENTS.

There was very little difference to be noticed between colonies packed under sealed covers and those under absorbents. The difference, if any, Mr. Bain says, was in favor of the first mentioned. When it is remembered that we have tried these two forms of wintering side by side for a series of years, with the odds nearly always in favor of the sealed covers, the reader can naturally see why we champion that plan—at least for our locality. We have a suspicion that those who so loudly champion the absorbing-cushion plan of wintering may not have tested side by side the sealed-cover and absorbing-cushion plans; for if they were to do so for a series of years they might find the sealed cover simpler to handle, and during some seasons considerably in the lead so far as results are concerned.

PAPER WINTER CASES.

There was comparatively little difference between the paper-winter-case-packed colonies and those in double-walled chaff-packed hives. The difference, if any, however, was in favor of the latter. The greater the thickness of walls, and the better the packing material, the better the results. If the walls are very thick it renders the hive too expensive, and the difference in cost is not offset by the slight gain in the saving of bee life.

RECAPITULATION; THICK VS. A THIN SYRUP AND FEEDING LATE.

As the result of our experiments indoors and outdoors during this past severe winter, honey-dew stores have sustained their reputation to a great extent for being an inferior food for wintering, although the results are not as disastrous as might have been expected, judging from previous years.

Sugar syrup fed thick, even though late in the season, has again demonstrated its ability to bring bees through safely to spring. It is clearly proven that a thick sugar syrup is better than a thin one for winter feeding, and we are inclined to the opinion that late feeding of a thick syrup is not detrimental, as has been supposed, but even has its advantages. Slow feeding in the fall, with a thin syrup, exhausts the vitality of the bees, because they must drive out the excess of water, and this seems a severe drain on them at a time of year when their strength should be conserved. By giving the thick syrup, two and a half to one, comparatively late in the season, the bees are given the very best feed, even though they will not be able to invert it or cap it over. Feeding a large amount of thick syrup practically in one dose does not exhaust the vitality of a colony nor unduly excite it like repeated doses of thin syrup extended over a period of two or three weeks. While we advocate feeding early enough so that the bees can cap the stores, our experience seems to show that this is not essential. At one yard where our bees wintered so well it was so cold when we fed late last fall that the syrup was given hot. There were no fly days after that, and it stayed continuously cold until the fore part of March.

SIZE OF ENTRANCES.

Still another fact that was somewhat surprising was that those colonies having a wide-open entrance, one inch deep by the width of the hive, seemed to winter as well as those having a contracted entrance $\frac{1}{4}$ inch deep by 8 inches. Our Mr. Bain, however, suggests that the snows were so deep all last winter that the entrance of all colonies, large and small, were closed from chilling drafts of air. During open winter we have found that wide-open entrances were too much of a good thing, and have, consequently, advised a limited contraction.

It seems to be proven again that, for our locality at least, sealed covers have the preference, as they make less trouble, and the bees under them winter perfectly. More we could not ask.

STRAY STRAWS

BY DR. C. C. MILLER

WHY NOT make of cement those hive-stands of F. Greiner, p. 149?

MRS. J. W. BACON's plan, page 183, of running up to 12 or more brood-frames and then reducing to 8 when putting on supers, is excellent practice. We do it here by using two eight frame bodies.

J. E. CRANE, you're naughty to try to drive me out of bee-keeping, page 173, by saying I must locate bees where stones are not needed to keep covers from blowing off. No such location here. But with flat covers I never use stones except sometimes early when covers have been cracked open and it is too cold for glue to stick them on again.

NEVER BEFORE did I know a winter here when grass stayed green all the time from fall till growth started in spring. Clover shows up fine. But will it honey? as the Germans say. [Clover is fine here, and reports are favorable wherever it usually grows. Will it "honey"? We never knew of a year when it did not "honey" after a heavy snow.—ED.]

J. L. BYER, you ask me to mete out justice in that case, p. 192. The editor prefers that the subject shall "requiescat in pace;" but you come to the next Chicago convention and meet me at meat between sessions, and I'll mete out all the justice you want. It is just as easily settled as were lots of cases where two men had herds of cattle on the same wild land; and please remember that at present, so far as bees are concerned, all land is wild land.

MR. SIMMINS is a man for whose word I have great respect; but I am just a bit skeptical as to meal-feeding being as bad as he paints it, p. 178. I have fed many bushels of ground corn and oats in spring, and never knew any bad results from it. Still, there is the possibility that I am, as he says, "not too observant." [This is a problem that will vary somewhat according to locality. There is danger of coaxing the bees out too early. Nature does not usually furnish natural pollen before the bees ought to have it. Man very often tampers with nature, disarranging her plans, with the result that trouble follows. Notwithstanding, we think there are times when bees may and should be given artificial pollen. As many noted last spring, considerable brood died because of improperly balanced ration—that is, a lack of the nitrogenous element in their food. Of course we have no positive evidence that the brood died from this cause; but the circumstantial evidence was very strong.—ED.]

VIRGIL WEAVER, much obliged for promise, p. 197, of a crop this year; but how am I to tell whether winter has nothing to do with it? The winter of 1908 was open; and although plants could be seen quite early, their roots must have been hurt, for later on they

disappeared and few plants were to be seen, to say nothing of blossoms, so of course there could be no honey crop in 1909, and it looks as if winter had killed the plants. The winter of 1909 had such a snow-blanket as I never knew before; plants look superb; and if there's a bumper crop one can hardly blame that snow-blanket for putting in a bill of charges for winter protection. [Mr. Weaver has fairly earned a reputation for being a good prophet. His predictions for the last three or four years have come very near being true. He may be mistaken in some of his conclusions, but in the main he seems to have discovered some conditions that are favorable and unfavorable to a clover yield.—ED.]

CAN IT BE that locality makes a big difference about the kind of day when bees should be taken out of the cellar? In this locality a warm sunshiny day is always chosen for taking out bees; and the ill results mentioned, p. 195, do not follow. The entrances are immediately closed up to a square inch or less, and that probably makes a difference about drifting. If a colony is *quietly* placed upon its stand when warm enough to fly, why should it fly out any differently from what it would if it had been on its stand for a week? An important item is that the cellar must be wide open all night before taking out. If I should take them out on a cold cloudy day there might come severe cold for a week or more, when they would be very much better off in the cellar.

P. S.—Since writing the above I have read R. F. Holtermann's "drifting" article, page 196. He thinks the principal cause is "excitement on the part of the bees so that they do not mark their location as they leave the hive," and he also thinks "the rapid changes of conditions from inside atmosphere to the outside increase the excitement of the first fly." You will see that I provide for both these contingences. By having the cellar wide open the previous night there is little change upon going to the outside atmosphere, and I think the contracted entrance does much to make them mark their location. [It may be that giving bees fresh air the night before taking them out of the cellar may to a great extent overcome the excitement that would take place under other conditions when set out. In our locality we can be reasonably sure of favorable weather on a day following. The United States weather reports are fairly reliable. Let us suppose that to-day it is a little too cool for the bees to fly. The weather report shows that it will be warm and balmy tomorrow, with probably a clear sky, which means sunshine, of course. We set the bees out toward night. It is a little cool during the night; and as the cluster gradually unfolds the next morning the bees find their way to the entrance; and when the temperature is right they will come out gradually—not with a pell-mell rush. As the hives are all out, we avoid some of that "drifting" of which we have been reading, and ere long the bees quiet down to normal.—ED.]

BEE-KEEPING AMONG THE ROCKIES.

By WESLEY FOSTER, BOULDER, COL.

WINTER VENTILATION.

If bees have a large winter entrance they are more apt to come through in better shape than if the entrance were contracted. If mice are troublesome they may be kept out of the hives by using wire screen three mesh to the inch over the entrance. The value of abundant ventilation during the winter is better known now among western bee-keepers than a few years ago. The contraction of the entrance is still thought to be essential by many; but some of the most successful ones have had some experiences that point the other way.



THE SNOW ON THE RANGE AND ITS EFFECT ON THE WATER SUPPLY.

Government reports from the mountains show that the fall of snow so far is below the average, and that there will be less water for irrigation than last year unless a great deal falls from now on. The warm days in the winter, which aid in settling and packing the snow into ice sheets on the high levels of the ranges, have been numerous this winter—at least they came at times when there was snow to be settled and packed. The report says there is considerable soft snow in the timber on the lower levels and foot hills. This condition of snowfall is general throughout the mountains of Colorado.



SHIPPING COMB HONEY; FREIGHT CLASSIFICATIONS, ETC.

A shipment of comb honey was recently made from a distance of several hundred miles into Denver. The shipper did not know that the glass fronts should be protected with wood strips so the shipment would take the lowest possible freight rate, which is the first-class rate in less than carload lots. The first-class rate is \$1.70 between this point and Denver; and where the glass fronts are not protected the rate is double first class; so it cost this bee-keeper \$3.40 a hundred to ship his honey to market. By tacking a little strip of wood over the glass, 45 cents a case in freight would have been saved.

This ruling of the railroads in regard to comb honey in glass-front cases is unjust I think; for where the glass shows the contents of the case it is much more likely to be carefully handled. A lot of single-tier cases of honey with wood slide in place of glass came through in very bad shape, practically all of it mashed and broken. The freight men thought it was cheese or butter, no doubt.

These instances show that bee-keepers can not be too well posted on freight rates, classifications, and the proper way to ship honey.

If the freight agent in the first case spoken of had been looking out for the best interests of his company's customers he would have told the bee-keeper how to secure the lowest possible rate.



COMB-HONEY CASES WITHOUT GLASS.

This whole question of glass cases or no glass has reference to producing sections of the country and the distant markets. Fruit and honey have met much the same conditions in seeking a market. Twenty years ago the bulk of the fruit crop was produced in the Eastern States, where the most of it found ready sale in nearby markets. The battle for markets was not severe, and extra bids were not made for trade. With the commercial orchards of the West, where markets were two thousand miles distant, the sales demanded the packing of only the choicest sound fruit, for the inferior produce would spoil before the market could be reached. The profitable following of fruit culture at once depended on allowing only the best fruit to mature on the trees so all the crop would be fit to ship. Then when the Western growers found out their only hope was in quality (they could not sell average fruit in competition with Eastern fruit), they had to raise a better article, put it up more attractively, and get a higher price. The covering of the edge of a box of dried peaches with lace paper has added 10 to 15 cts. to the price received.

This is the state of affairs in the honey market. Western honey has to be whiter, and more attractively put up in double-tier shipping-cases, to find a sale in the Eastern markets. But those markets now want the goods the way we put them up, with one fourth of the case exposed to the glass front.

Mr. Scholl objects very much to the Colorado methods of producing honey; but we could not produce comb honey in bulk and ship into Texas to compete with his product. The cost of shipment would prohibit, and then we should have to sell it as cheap as he sells his or not find a market. But we can sell our comb honey right in Mr. Scholl's Texas markets because we are supplying a demand Mr. Scholl does not meet. We cater to a trade Mr. Scholl considers unprofitable. It may be, in comparison with his bulk-honey business, but it is the only way we can dispose of our Colorado crop. I think we get much more per pound than Mr. Scholl, though it costs us much more to produce it.

Cars of comb honey have been shipped out of Colorado by the score at \$3.00 net per case to the producer, and I know of one car that brought \$3.15 per case of 24 sections. For the actual weight of honey in a case, that would be at least 16 cts. per lb.

I do not doubt that Mr. Scholl can make more money with bulk honey in his location and relation to markets; but I think Colorado and other Western bee-keepers do better to produce a white comb or extracted honey.

NOTES FROM CANADA

BY R. F. HOLTERMANN.

WINTER LOSSES.

At this time of writing, March 8, bees in this section of country, if outside, have had a splendid fly. So far as I can judge, bees properly prepared and wintered outside have wintered well. On Saturday, March 5, the weather was so mild the bees were working on hyacinth and other blossoms offered for sale on the Brantford market square.

IS HONEY-DEW AN EXCRETION?

Observations covering many years and sections of the country convince me that honey-dew may be an excretion from plant-lice or that it may be given off by the leaves themselves. It may be possible to prove the above; but I pity any one who attempts to prove that it never is an excretion. In my estimation, not much damage can be done to the honey-dew industry. It speaks for itself.

ARTIFICIAL POLLEN.

Jacob Alpaugh recommends peameal or "Brose" as a substitute for pollen, and advises mixing it with chopped oats or bran, feeding it in a sheltered place near the apiary, setting the trays out in the morning, and taking them in or covering them in the evening so the dew will not wet the mixture. He recommends either putting a little honey here and there on the artificial pollen to entice the bees, or putting some on the end of a stick, collect bees on the end of this stick from the entrance of a hive, and then carry the bees to the pollen on the stick, in this way introducing the bees to the pollen.

WHEN THE SWARMING TENDENCY IS GREATEST.

Page 138, March 1, Wesley Foster says: "In this country I know the control of swarming hangs around a few days after the lower hive is well filled before we get the bees fully convinced that supers are the next on the program, and not swarming." The above is a very important point in this country. I consider that, when the time indicated is timed over, there is not much danger from swarming until the supers become crowded. A large entrance and shade are, however, no mean factors in preventing swarming.

KEEPING HONEY FROM GRANULATING.

On page 134, March 1, the editor states, "Apparently, then, a very cold temperature or a very warm temperature is less favorable to granulation than any point between." This is just my experience. To quite an extent the result from these two extremes is the same. In the former, granules show no tendency to form (may I so express it?); in the latter the honey is so thick the particles can not move, and the process is retarded. In this latter case, however, I believe a microscopical examination would reveal many fine grains.

The provincial apiarist has sent out the following advice, which will commend itself to bee-keepers generally:

I understand from our inspector's reports that you have had, within recent years, foul brood in your apiary. If this is the case you should be particularly careful to prevent robbing during the warm days between now and summer. All hives where bees have died must be taken indoors, away from all possible robbing. It is not enough to close them, because robbers will often gain an entrance when least expected. All entrances of live colonies should be made quite small, especially where the bees are weak in numbers.

Use every precaution and great watchfulness to prevent robbing. Do not under any circumstances leave combs of honey out for the bees to clean up. Any honey you have is likely to contain germs which would scatter disease in your healthy colonies. On account of prevalence of disease in unexpected places throughout the province it is neverwise to feed honey to bees; and where disease is known to exist it is the worst of folly.

I hope you understand fully the symptoms and cure of foul brood. If so, you can be your own doctor, as the inspector's time is fully occupied with those who do not understand the disease. If not, drop me a card, and a bulletin with description, and full instructions will be sent you.

LECTURING IN CANADA.

On page 42 the *British Bee Journal* contains the following:

I am an old English country bee-keeper, and have settled out here in British Columbia. I find the American system of bee-keeping is the only one practiced; and, having learned all there is to be known about it, I keep my opinion that it is not to be compared with our British method of manipulation. We enjoy very long summers here, and the climate is favorable for bees; but there does not seem to be any one except novices in the bee-business, and some have been very successful, so I have no fear of my results. I am an all-Britisher if possible, and shall push the old-country appliances as soon as I can fix up my depot and get a good home firm to represent. By profession I am a watchmaker; but out here things are not so finely defined, and it is not unusual to change one's trade. What books would you recommend to one who intends to make bees a leading line as a lecturer, for instance?

Victoria, B. C.

E. C. APPLEBY.

Many English complain that they are not properly treated by Canadians when they come to this country. Let me point out that the above remark indicates clearly a spirit that Canadians say is altogether too prevalent among the English when they come to Canada; and the few or many, as the case may be, who manifest this spirit make the position difficult for those among the English (and I believe of the latter there are many) who have no such exalted view of their own attainments.

As far as the position of lecturer is concerned, there is no such opening in this country; and if there were a lecturer going abroad in such a spirit he would have to become his own employee, advertiser, audience, etc.

I have read the *British Bee Journal* with profit for years, as also German and French journals, and these papers can be read with profit by bee-keepers on this continent; yet what little I know of "the American system of bee-keeping," and particularly in its *apiarian appliances*, has a foremost place with me. I believe we have been ready to embody every good invention, such as the honey-extractor, comb foundation, etc., into our system, and therefore we have never assumed a position of *knowing it all*.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

WHAT CONSTITUTES A GOOD QUEEN?

"I have read your Conversation, October 15, and I want to know how you raise *good* queens so late in the season."

"How do *you* raise good queens at any time of the year, Mr. Van Deman, or in mid-summer, when a good yield of nectar is on?"

"That is very simple. I let the bees do it."

"Sure. And the bees do it in the fall. It is just as simple the first half of September, with feed and a little manipulation, as it is the first half of June, in this locality. In fact, the conditions during the former are equally propitious with the latter, for the first half of June gives us a dearth of nectar and more fluctuating weather than does September. But in either case, by feeding and stirring the bees up they are brought into as nearly the same condition at these times as are your bees in mid-summer when you just let the bees raise the queens themselves. In June the bees are more active than they are in September, when, as a rule, the excitement brought about by feeding is all that is necessary to put them in the same condition they are when a good flow of nectar is on. But in September the bees are not so active; and to bring them into the condition to raise good queens, after feeding for two days the queen is taken away from this colony (which should always be the strongest in the apiary), and the next day the bees are caused to fill themselves with honey by drumming on the hive, when four-fifths of them are shaken into an empty hive or box, the sides of which are covered with wire cloth. They are kept in this box from 9 A.M. to 2 P.M. Then all but the sealed brood which the colony contained is taken away, a frame of prepared cell cups given, and the bees returned from the box. During this five hours of being boxed, both the few bees left in the hive, and especially those in the box, come to realize fully that they need a queen, and need it fully as bad as in natural-swarmling time, which works them up to as much activity as is possible at any time of the year. This, with the continued feeding, brings out an extra-fine batch of queen cells from which emerge as fine queens as you ever set eyes on. However, with the exception of early spring and in the fall, our queens are reared in upper stories over a queen-excluder. See 'Scientific Queen-rearing.'"

"Now how about the drones?"

"Near the close of the drone-brood season, all the brood of that persuasion is taken from the three or four colonies having the best drone mothers at their head, and this brood massed in a strong queenless colony which is kept very strong by giving it an upper story, into which frames of emerging brood are inserted as often as is necessary to keep up the required strength. When

our September-reared queens are ready to mate this hive is looked over, and all the under-sized drones, and those apparently defective as to wing power, shape, or otherwise not what we would like, are killed off, when this colony is regularly fed between 12 and 1 o'clock each day, which causes an activity of these drones much above normal. In this way we get queens equal to those reared at any time, and, as all other drones, or at least the most of them, are now killed off, we get all of these queens mated to what has been termed 'hand-picked' stock."

"Do you select your breeders from these?"

"Very many of them."

"What constitutes a good breeder?"

"As a rule, we prefer a perfectly developed queen of about medium size. We have found that queens of abnormal size, or those much under size, are not equal to those which are about normal. Aside from size and perfect development, we next ascertain how her eggs are laid. If scattered about in the combs with missing cells here and there, together with some stuck on the sides of the cells, she can not be classed as a good breeder. Now, understand, this is when she has a hive of empty combs before her, as any queen has, as a rule, when she first begins to lay. If there is brood emerging here and there in the hive, any queen will scatter her eggs about among this brood, no matter how good she is. Then when her brood emerges from the cells and gets straightened up, say three days after they begin to emerge, these bees should be of normal size and show the regulation markings, while her queen progeny should be of the kind as to development, size, etc., as was the mother."

"There seems to be no standard as to what constitutes a pure queen of any race."

"I fear you have not read the many good books on bee-keeping. Nearly all of the books like the A B C and X Y Z of Bee Culture, Langstroth, Quinby, etc., treat on these things, and I would refer you to them."

"All right. But what is the size of a colony that can be called strong in the spring, say when the first pollen comes?"

"At a New York State bee-keepers' convention, some 25 years ago, this same question came up, and a committee was appointed to report on it. As my memory serves me, that committee told us that any colony which, on the first of May, in an average season, on a morning so cold that there was a frost, showed a cluster of bees between seven combs, or what is known as a six-space cluster, could be considered a good colony of bees, as such colonies would give better results at the end of the season, other things being equal, than colonies showing either more or fewer spaces occupied. And as I remember it, the sense of that convention was that the five-space cluster was preferred to any colony occupying from eight to ten spaces, or what would be considered an extra-strong colony at that time of the year. Years of experience has told me that the report of that committee was a wise one for a latitude ranging between 40 and 45 north."

GENERAL CORRESPONDENCE

LIQUEFYING CANDIED HONEY ON A LARGE SCALE.

Some Objections to the Solar Method of Treating Honey to Prevent Granulation.

BY O. B. METCALFE.

On p. 769, Dec. 15, Mr. H. R. Boardman describes his method of treating honey to the sun's rays to prevent its granulating. Now that some one else has mentioned it I have noted several times that honey heated by sunlight does not granulate quickly if at all. Season before last we had some 25 cases of honey in quart jars that candied before we could sell it. As an experiment I melted up some five or six cases of it in the sun extractor; and although several jars lay around for months it never candied again. I took notice of this fact, but thought it no doubt due to its getting too hot, for it came out of the sun extractor quite dark, and tasted badly "cooked."

Besides this experience, some five or six 1-lb. jars of candied extracted honey were set out on the sunny side of one of our honey-houses last spring. The sun liquefied the honey, and I remember that it remained so until the time I left home in the fall, but that also seemed to have been heated rather too much. Now I want to know how much the sun heats Mr. Boardman's honey, and how long he exposes it to the sun.

There is, perhaps, no question which more vitally concerns a New Mexico bee-keeper than the granulation of honey, and no place where bee-keepers could better give it the sun treatment if proven effectual.

C. W. Rever, in the same issue, p. 771, expresses his hopes of a fireless heater which will use the sun's heat for melting honey on a large scale. I have given this matter considerable thought, and have used the sun extractor to melt up a great deal of candied honey by emptying it into the trays of the extractors just as though it were cappings; however, I always melt up just some odd batch of honey in this way, such as a tub or small settling-tank full which has candied before it would settle or before we got it drawn off; and I did it with the understanding that it would get too hot and turn too dark to sell as No. 1. In tin cans the result is even worse, for the melted honey can not run down out of the sunlight; but the unmelted chunk settles to the bottom, where it keeps cool longest, while the melted portion, which is already hot enough, is nearest the sun's heat, and gets hotter and hotter.

Heating by fire has the obvious advantage that the heat may be applied to a large bulk for as long a period as it takes to do the work, and at the bottom, where the unmelted chunk rests; or the honey may be stirred to

prevent its getting overheated in one place while unmelted in another.

One other point against melting honey in the sun extractor, which I noted, was that it would not quite *all* melt. A thin scale of sugar, which resembled rock candy, would settle to the bottom of the jar, and remain so, no matter if I left it for several days, while the slumgum in another part of the same sun extractor would register over 212° F. all through the hot part of the day.

Right here I wish to advise any bee-keeper who attempts the melting of a 35,000-lb. car of honey to make extensive preparations first for doing so. A year ago last fall, with my Mexican boy to help, I set about such a task. The first thing I did was to get enough galvanized iron to make a heater which would hold 27 60-lb. cans of honey, and take cordwood in the fire-box; and now as I think over that experience I believe that still better advice to my brother bee-keepers would be, "Don't let as much as a carload of honey candy on your hands unless you mean to bottle it yourself or sell it granulated." A carload of it candied hard is a big, cold, unrelenting mass.

THE CAUSE OF THE FINE SPECKS IN MR.
BYER'S HONEY; HOT WAX AND HONEY
SHOULD NOT BE STIRRED.

I am wondering if Mr. Byer, p. 779, stirred that honey in the capping melter. Season before last we were so late with our last extracting that the sun extractors would not melt the cappings; so I set to work to handle them by artificial heat. I made a heater which held 400 lbs., and dumped in the cappings as fast as they melted up. That worked well, for the next morning I had a lot of clear but well-cooked honey in the bottom; next a layer of slumgum, and on top a nice cake of yellow wax; but the honey was too dark and the process too slow, so I emptied the heater, fired up again, and filled in the cappings by the tubful; took a garden-hoe, and, standing over the melter, stirred all the time to keep the mass at an even temperature, meanwhile adding more cappings until the melter was full. I turned up the gasoline flames under it, and stirred constantly until the mixture reached about 160°F., then turned out the fires and left it to settle. Next morning I expected, of course, to have a fine cake of wax on top, a layer of slumgum, and in the bottom some good honey; but to my surprise, there was, instead of wax on top, a light sticky spongy substance. I drew off some honey from the bottom; but instead of being clear and nice, as I expected, it was cloudy; and upon close examination it was found to have tiny particles of wax all through it, even at the very bottom of the tank. I said to myself, "Well, I'll have to strain you!" but this I could not do, for it instantly clogged the strainer. Then I heated it so it would run through the strainer all right, and again left it to settle. The next day I found the same proposition. While hot, the wax, of course, went through the strainer, as I had finally seen it was doing the day before. I decided to give it

longer time to settle; but, alas! it never did settle so I could draw off clear honey from the bottom. My conclusion was that, if hot wax and hot honey are well stirred together, and if it is *thick* honey, the tiny globules of wax will not rise before the honey cools; and once it cools they will hardly rise at all; and it may candy before it will settle. It may be that the "veterans" know this; but I did not, and I am now wondering if it does not explain the specks which appeared like grains of pollen on the tops of Mr. Byer's honey-pails.

Mesilla Park, N. M.

[We have seen considerable of Mr. Boardman's honey; and, as we now recall, the color, body, and quality were the equal of any clover extracted we ever saw. Certainly the color could not be in any way considered darkened in the least.

There are a couple of conditions that may be considered as possibly influencing the color of your honey. First, you have a much hotter climate; and the presumption is that the heat inside of your sun extractors is much higher than would be the heat inside of Mr. Boardman's. But the most important factor is that you liquefy honey that has been actually candied solid in the sun extractor, and the long-continued high temperature required to bring it to a liquid condition would necessarily affect its color. Mr. Boardman does not, as we understand it, allow his honey to candy, but treats it *before* it candies, as explained in his article on page 768, Dec. 15, last year. In doing this his honey is not subjected to so long-continued a heat. We would infer, then, that the sun's rays, when applied no more than enough to arrest granulation in liquid honey, would not necessarily affect its color, although there is a bare possibility that alfalfa might be more susceptible to the actinic rays than ordinary clover or basswood. It is true that Mr. Boardman, in his earlier experiments, liquefied granulated honey; but his scheme seems to be confined to *liquid* honey.

It would seem to be very clear from your experience that candied honey can not be as satisfactorily liquefied by sun heat as by artificial. If we remember correctly, Mr. R. C. Aikin, of Loveland, Colorado, experienced somewhat the same difficulty in rendering up combs in his solars. He found that the honey and the wax on the top were overheated, while the slumgum beneath was only partially melted. To overcome this difficulty he applied artificial heat on the under side to the pan of the solar extractor, thus getting heat from above and below. This might eliminate a part of your trouble, although it would be our opinion, if artificial heat is to be used at all, that the increased cost from using the sun's rays would more than offset the slight advantage.

If any other correspondent has had the extensive experience of Mr. Metcalfe in liquefying candied honey by sun heat, we have never heard from him. Certainly his experiment was conducted on a sufficiently large

scale to justify the conclusion that solar heat is not satisfactory for melting up granulated honey.—ED.]

BEES AS ROBBERS OF FLOWERS.

BY JOHN H. LOVELL.

Dr. Miller's wide range of information and genial humor render his page of notes most valuable and entertaining. *Apropos* of his remark on the absence of nectar from roses, while I certainly do not wish to be censorious, for we are all fallible enough, still I think that popular writers on the honey-bee should be more accurate in their statements. For example, a well-known writer of children's stories not long ago told in the *Ladies' Home Journal* of a bee that gathered honey and wax all through the long summer months. With a little effort the proper source of wax might easily have been learned.

Now as to the question, "Why do bees seek to enter the young buds of roses?" Perhaps a brief inquiry as to the behavior of bees (bumble-bees as well as honey-bees) toward flower-buds in general will be helpful.

The fly-honeysuckle, or *Lonicera ciliata*, is a graceful slender shrub which blooms in our rocky northern woodlands during the last weeks of May. The flower-stalk bears at its summit two pendulous, yellowish-green flowers, which are half an inch in length and tubular in form. The nectar is secreted and lodged at the base of this tube, where it can be readily reached by the long tongues of bumble-bees, by which chiefly this species is pollinated, though it is also visited by butterflies. But the female, or queen of *Bombus consimilis*, instead of waiting for the flower to expand often bites a hole through the bud. Sometimes the perforation is near the apex of the bud, but usually it is near the base of the tube, and in one instance I found the corolla nearly circumcised, and held by only a few threads.

Bees also puncture at the apex (usually on the under side) the buds of the common skullcap, or *Scutellaria galericulata*, even when they are quite immature. The flowers are labiate, or lipped, and in two instances I observed a narrow slit on the upper side of the corolla tube, and in a third case the whole upper portion of the tube was cut away, leaving the lips suspended by a mere thread. The buds and hollow tubular nectaries of many other flowers are robbed by bees in the same way. Let us go out into the field and observe how bees puncture the nectaries of two or three different kinds of flowers.

The familiar "touch-me-not" (*Impatiens fulva*) has its brown-spotted orange blossoms shaped like a horn-of-plenty with the spur inflexed or bent inward beneath it. This spur contains the nectar. The flower is suspended horizontally with the anthers and stigma lying upon its upper side, so that, when a bee enters the dilated corolla-sac, its back is dusted with pollen, which it carries away to another flower. While the spurs

may often be found intact, they are frequently punctured by bees. August 10 I examined a large number of flowers, but none of the nectaries were perforated, and they were visited in the legitimate way by *Bombus consimilis*, which made from seven to twelve visits per minute. The thorax of the bee was plentifully covered with pollen. From August 23 to 27 I found hundreds of the flowers perforated, and both bumble-bees and honey-bees stealing the nectar. A honey-bee was watched during 25 successive visits, and in no instance did it make even a pretense of visiting the flower in the normal way; but in every case it swung itself beneath it, got astride the spur, and began sucking the nectar. The number of visits per minute was about ten. Both the honey-bee and *Bombus terricola* were observed in the act of puncturing the nectary. The maxillæ alone were employed, and were moved slowly back and forth for the purpose of piercing the tissue. The perforation is usually 3—4 mm. from the end of the spur, which is 10—11 mm. long. Sometimes there is one, sometimes several openings, or there may be a slit 3 mm. long.

If, after the manner of certain plants famous in myth and story, the *Impatiens* (fitly in this respect called "touch-me-not") could speak, what a protest it would utter! For unknown centuries it has been building up its flower edifices only at last to find its work in danger of being rendered worse than useless by a change in the habits of its bee visitors. It should, however, also be stated that the flowers are frequently visited by humming-birds, and I have also seen another smaller species of bee enter the flower in search of pollen. Small beetles and spiders occasionally seek shelter in the sac, and various flies are attracted to the outside by the bright colors.

The columbines in my garden secrete nectar very plentifully. If a flower of the white variety be held so the light will shine through its translucent tissue, the nectar may be seen filling a tenth of an inch of the hollow spurs or nectaries. Both the purple and white varieties are punctured by bees. Mueller observed a bumble-bee, after licking the calyx in a fruitless endeavor to obtain the honey, bite a hole in the spur; and afterward it punctured the flowers visited, without any preliminary delay. I have observed three distinct incisions, one above the other, on a petal of this plant. The first was over half an inch from the tip of the spur, well up on the expanded part of the tube; the second was much lower down, and the third still nearer the tip. Apparently the upper puncture was too far distant to permit the tongue of the bee reaching the nectar; and to rectify this mistake the other holes were made lower down.

The flowers of the scarlet runner are very attractive to bees. August 14, in my garden the vines were in full bloom and were a blaze of glory. Honey-bees and bumble-bees were constantly coming and going, but not one of them entered the flower in the normal way.

There was a hole on the under side of every nectary; and, what was a little singular, they were all on the left-hand side. The bees went directly to these holes, out of which they easily sucked the nectar. More than 300 species of flowers are known in which bees bite holes, and which they rob of their nectar, and several of these often fail to produce seed. Both the mandibles and maxillæ are used for this purpose—the former for biting, the latter for piercing. If there are two small punctures side by side, they were made by the mandibles; but if a narrow slit, by the maxillæ. A few of the more common forms robbed by bees, besides those already mentioned, are the red clover, locust, *Dicentra corydalis*, dead nettle, larkspur, acornite, and vetch.

We are now in a position to answer Dr. Miller's question. Bees bite holes in many buds because the petals are united by their edges into tubes or bells, and they can not gain access to the interior of the flower in any other way. Their object is to find nectar before the flower opens. But in the rose all the petals are separate and distinct, and essentially alike. There is no occasion to puncture them. The bee gains an entrance to the flower by pushing its way between the petals of the growing bud. It is, no doubt, looking for nectar. Of course it does not then know that roses are nectarless; for if it is early in the season it has never before seen a rose. But bees very quickly learn from experience that the roses contain only pollen, and ever after they remember it. The ability of the bee to learn from experience is well illustrated by their behavior toward buckwheat blossoms, on which they work in the morning but not in the afternoon. So, too, they do not visit the gaudy, nectarless exotics of cultivation, for they have learned from experience that their time would be wasted. The mental attributes of the honey-bee are far too high to permit its flying in a mechanical way indefinitely to a flower from which it gains no advantage.

Waldoboro, Maine.

[The honey-bee is not provided with cutting-jaws like the wasp and beetles. At one time it was supposed that honey-bees could cut through flower-tubes; but some of our best authorities doubt this. The holes found near the nectaries of the flowers could easily be made by other insects provided with cutting-jaws. Unless you actually saw honey-bees do *all* of the cutting from start to finish on the touch-me-not, we should be inclined to the belief that other insects had already been there before, started the job, or made a minute hole which honey-bees, coming on later, could enlarge. We have proved this was the case when the charge was made that bees punctured grapes. We found that a small bird started the holes, and that, later on, bees came on and made the holes larger. In the case of the touch-me-not, "small beetles," and "spiders," both provided with cutting-jaws, and both of which you found on the flowers that were cut, might be the real culprits.—ED.]

TREATISE ON POLLINATION OF APPLE-BLOSSOMS.

BY C. I. LEWIS AND C. C. VINCENT,
of Oregon Agricultural College Experiment Station,
Corvallis, Oregon.

[We take pleasure in presenting the following article from *Better Fruit*, on the subject of fruit-blossom fertilization, as it is of special interest to the majority of our readers at this time. Being written from the standpoint of the fruit-grower it is, of course, absolutely without prejudice in favor of the bees.—ED.]

It was not until the close of the last decade that the significance of pollination of apple and pear blossoms came into prominence. Through the efforts of M. B. Waite, in the United States Department of Agriculture, intelligent light was thrown upon this important question.

As far back as 1793 the importance of insects in pollination was impressed upon the minds of many investigators; and Mr. Sprengel, a German writer, published a book entitled, "The Secret of Nature in the Form and Fertilization of Flowers Discovered," which proved to be an effective stimulus for future work upon this interesting study. 



PLATE I.—FIRST STEP IN EMASCULATION

While Sprengel's work was practically forgotten, other investigators were making acute observations on the cross-fertilization of flowers, which completely overthrew the theory advanced by Sprengel, of the independent creation of species. Not long after Sprengel's book appeared, Andrew Knight carried on some very interesting experiments on the cross and self fertilization of the pea, and arrived at the conclusion that in no plant does self-fertilization occur for an unlimited number of generations.

But it was not until after the appearance of Darwin's "Origin of Species" that Knight's theory was emphasized as a general law of nature. At this time the real value of Sprengel's work was realized, and his discoveries opened up new paths for investigation, especially along the lines which were to determine the forms of flowers.

In Darwin's "Origin of Species" cross-fertilization was emphasized; but no special significance was attached to this discovery until the appearance of his second work, entitled "Various Contrivances by which British and Foreign Orchids are Fertilized by



PLATE II.—REMOVING THE PETALS

Insects." When summing up his work he states, "Nature abhors perpetual self-fertilization." Not content with these results, he explored new lines of investigation, and from careful observations noted differences in the action of pollen on the same and another flower. Darwin's work, "Variation of Animals and Plants under Domestication," suggests many interesting lines of original research work, and from these suggestions experimenters have branched out into new fields of investigation.

It was largely through the efforts of Darwin that Waite carried out the experiments outlined in his bulletin, "The Pollination of Pear Blossoms." Since then many investigators, such as F. A. Waugh, S. A. Beach, C. P. Close, M. M. Munson, S. W. Fletcher, U. P. Hedrick, and many others from the agricultural colleges in the United States, have worked on pollination problems. Likewise H. Mueller-Turgau, O. Kirchner, and Dr. Ewert, of Europe, have also carried on many investigations and experiments on this subject. The many reports sent into this station from various parts of our State, complaining of the lack of setting of fruit, have led to investigations on this problem by this department, some of which are reported in this bulletin.

METHOD OF EMASCULATION.

Any one contemplating the carrying-on of pollination experiments must have a thorough knowledge of the parts of a flower before a high degree of success can be ob-



PLATE III.—REMOVING THE STAMENS



PLATE IV.—APPLYING POLLEN TO THE PISTILS

tained. Next, it is necessary to learn the operation of emasculating, which consists in removing the anthers from the flower. The object of this process is to prevent self-pollination. To remove these anthers in the best possible way is a serious question with many investigators. At this station the writers have received excellent results by the use of the method outlined below, and have made from six hundred to one thousand emasculations per day. In carrying on work of this nature, rapidity as well as efficiency must be sought.

Method.—Grasp the blossom with the thumb and fore finger of one hand, and grasp the tips of the petals with the thumb and fore finger of the other hand (Plate I.), then, by simply giving the wrist a quick upward or downward movement, the petals can be easily detached from the blossom (Plate II.). Now, with one or two quick movements with the scissors (Plate III.) the anthers are removed and the pistils are ready to receive the pollen (Plate IV.). After the application of pollen is made, the



PLATE V.—METHOD OF BAGGING THE BLOSSOM

emasculated blossom is enclosed within a bag (Plate V.) and allowed to remain until fecundation has taken place and all danger from the action of foreign pollen is over. After every pollination, label each bag in such a way that there will be no question as to what variety of pollen is used. As the apples approach maturity it is essential that they be enclosed in cheese-cloth bags. This protects the fruits from being picked accidentally. The object in removing the petals is to tell just where to make the cuts without injuring the other parts of the flower. Since this greatly facilitates the method of emasculating, it may serve as an impetus for greater work along this line.

Several methods of emasculating the blossoms are used by different investigators throughout the United States. Waite, of the



PLATE VI.—FIG. 1. IMPROPER EMASCULATION, SEPALS BEING INJURED. FIG. 2. PROPER EMASCULATION, SEPALS INTACT

Department of Agriculture, removes the corolla with the aid of a small sharp pair of scissors, leaving the emasculated blossom as seen in Plate VI., Fig. 1. Others have been fairly successful in using a sharp scalpel to perform the work. We have found that in every case when the sepals were removed with the petals it caused a malformation of the apple, as shown in Plate VII., Fig. 1. Fig. 2 shows a normal apple when sepals are unmolested.

It is evident that emasculating must be skillfully done, for the slightest mutilation causes a malformation of the calyx end of the apple. When the sepals were not injured in any way a large per cent of the emasculated blossoms set fruit. Plate VI., Fig. 1, shows the wrong way of emasculating, and Fig. 2 the correct way of emasculating. The method of removing the blossoms as outlined by the writers leaves the blossoms in perfect condition, with the fruit unharmed.

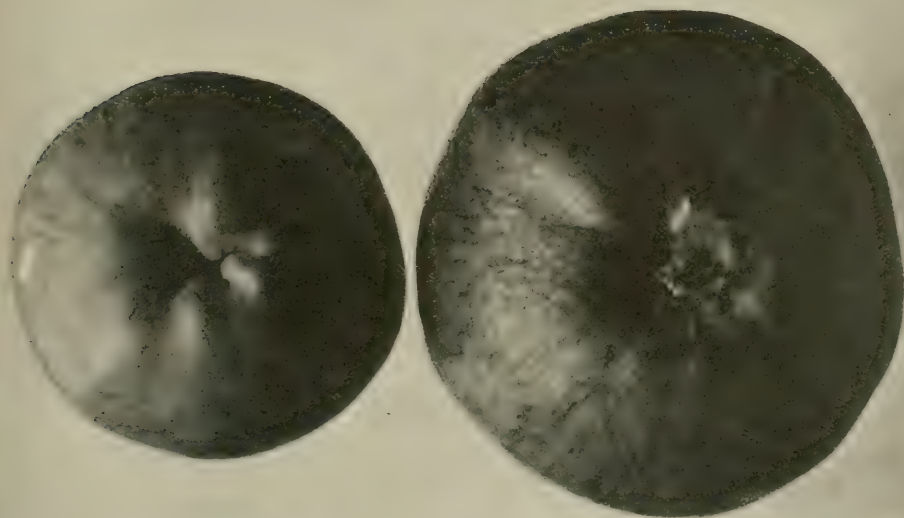


PLATE VII.—FIG. 1. MALFORMATION, CAUSED BY CUTTING SEPALS WHEN EMASCULATING.
FIG. 2. NORMAL APPLE, AS A RESULT OF ALLOWING SEPALS TO REMAIN.

COLLECTING POLLEN.

One of the greatest problems the plant-breeder has to meet is the collecting of an adequate supply of pollen for work on a large scale. It is evident that, where many of our leading varieties blossom together, pollen must be gathered in sufficient quantities beforehand, if extensive experiments in cross-pollination are to be carried on.

Since this is the case, means must be provided by which the blossoms can be forced. To accomplish this, a forcing-house is very desirable, although for work on a small scale any house having quite a few windows on the south side would answer the purpose.

Selecting Twigs.—Small twigs, from ten to twenty inches in length, having from three to six clusters of blossoms, are gathered from the variety which is to be used as a pollinizer, and taken to the forcing-house. First, all the open blossoms are removed from the twigs, which are then placed in jars of water and properly labeled, then covered with hoods so as to prevent the transfer of pollen by insects.

Usually the twigs are placed in the forcing-house a week or two before the trees come into blossom. If the weather is good the blossoms will open in three or four days. If, however, it is desired to obtain quicker results, it can very easily be accomplished by using warm water in place of cold. By split-

ting the stems of the different twigs the blossoms can be forced open from three to four hours earlier. In the experiments carried on, a gain of from one to two days was realized by the use of warm water and the splitting of stems.

After the anthers dehisce and the pollen becomes ripe, a small vial properly labeled, is used to collect the pollen. By removing the hoods the pollen can be very easily dusted into the vials with the aid of small camel's-hair brushes. Plate IX shows the vial, properly labeled and plugged with cotton, which is used by the writers to carry the pollen to the orchard. In these vials the pollen will keep until ready for use, if sufficiently dried. If it is not dried enough, fermentation will set in quite easily. Very gratifying results have been obtained by collecting the pollen in this manner. At the present time it is not known just how long pollen can be kept before losing its viability. At this station good results have been received from pollen that had been gathered three weeks.

One of the simplest ways of procuring pollen is to cover with paper sacks branches that are nearly in flower, and the ripened anthers from these blossoms can be used for pollination purposes. Another method is to put in a warm room unripe anthers from flowers about to open. In a few hours the

anthers will dehisce. Many pollenizers use this method in cases of emergency. Perhaps the most popular way of collecting pollen is to pick off the unopened buds, remove the anthers, and let them dehisce.

After trying some of these methods outlined we decided that better results could be obtained by the use of the forcing-house. In a house twelve by fourteen feet, containing from twelve to thirty jars of blossoms, sufficient pollen can be gathered to carry on very extensive experiments in cross-pollination.

APPLYING POLLEN TO THE PISTILS.

We have found that the quickest and most effective way of applying pollen to the pistils is by the use of a small pointed camel's-hair brush, having a handle from six to eight inches long. (Plate IV.) While in this way more or less pollen is wasted in making the application, nevertheless the disadvantages are greatly offset by the advantages. Brush pollination is very effective, also allowing for great ra-



PLATE XIII.—BLOSSOMS READY FOR EMASCULATION.

This should always be done before the petals unfold. However, when possible emasculation should be delayed until the petals are nearly ready to open.

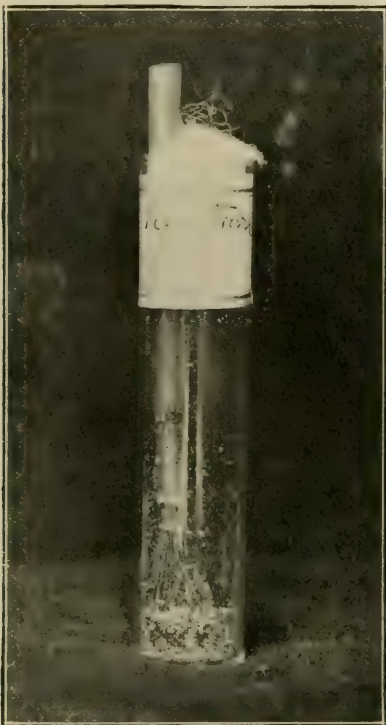


PLATE IX.—SHOWING METHOD OF COLLECTING AND TRANSFERRING POLLEN

pidity; and when a great many thousand blossoms must be pollinated it is the most practicable method used. The simplest way of applying pollen is to touch the stigma with a dehiscent anther. Another method is to dip the thumb or fore finger in the pollen and then transfer to the stigma of the pistil.

When using the camel's-hair brush too much care can not be exercised in making the application. Enough pollen should be placed on the stigma so that it can be readily perceived. In all cases each kind of pollen for each variety pollinated must have its own brush if scientific results are to be obtained. By sterilizing the brushes they can be used over and over again.

WHEN TO MAKE APPLICATION.

There appears to be considerable controversy as to the best time of applying the pollen to the pistils. The indications are that much depends upon the maturity of the buds whether or not a pistil is receptive at the time of emasculating. The receptiveness of the pistil is also influenced by such elements as climatic conditions, vigor and age of tree, variety, condition of soil, and general care of orchard.

The paramount question to settle is whether better results can be obtained by applying the pollen at the time of emasculation or waiting until the pistil is receptive. From the deductions made of the work carried on by this station, excellent results have been obtained by applying the pollen to the pistil

as soon as the blossom is emasculated. However, this may have been due to the fact that the blossoms operated upon were those that would probably open under normal conditions in one day from the time the operation was performed.

From the results obtained it is evident that in a great many varieties the pistils are receptive before the blossoms open. This being the case, it tends to show that nature encourages cross-pollination rather than self-pollination. One of the greatest advantages of pollenizing at the time of emasculating is the saving of time, as the bags will not have to be removed.

There are many plant-breeders that do not make the application until two or three days after the blossoms have opened. These men have also received very satisfactory results. Professor S. W. Fletcher, of the Virginia Agricultural College, usually waits until the stigma of the emasculated blossom glistens before making the application. Many other investigators pursue the same method. By consulting Tables IV. and VII. the percentages of successes of the two methods can be readily seen.

POLLEN TRANSMITTED THROUGH THE AIR.

It has been a question in the minds of many experimenters for some time just how much the wind aids in carrying pollen from tree to tree. If the wind does aid in distributing pollen, is it distributed in sufficient quantities to insure the fertilization of the ovules? Since so many of our varieties of apples are known to be self-sterile, and must depend upon

foreign pollen for fertilizing the ovules, this question is of serious consequence. Is it the wind or our common honey-bee that does the work? From the observations made the past two years it is evident that bees play an important part in the fertilization of the blossoms. To arrive at some definite conclusions as to how much pollen is transmitted through the air by the wind, experiments were carried on to determine this question. Waugh, of Massachusetts, demonstrated that plum pollen was not transmitted through the air in sufficient



PLATE XI.—EMASCULATING AND BAGGING BLOSSOMS.

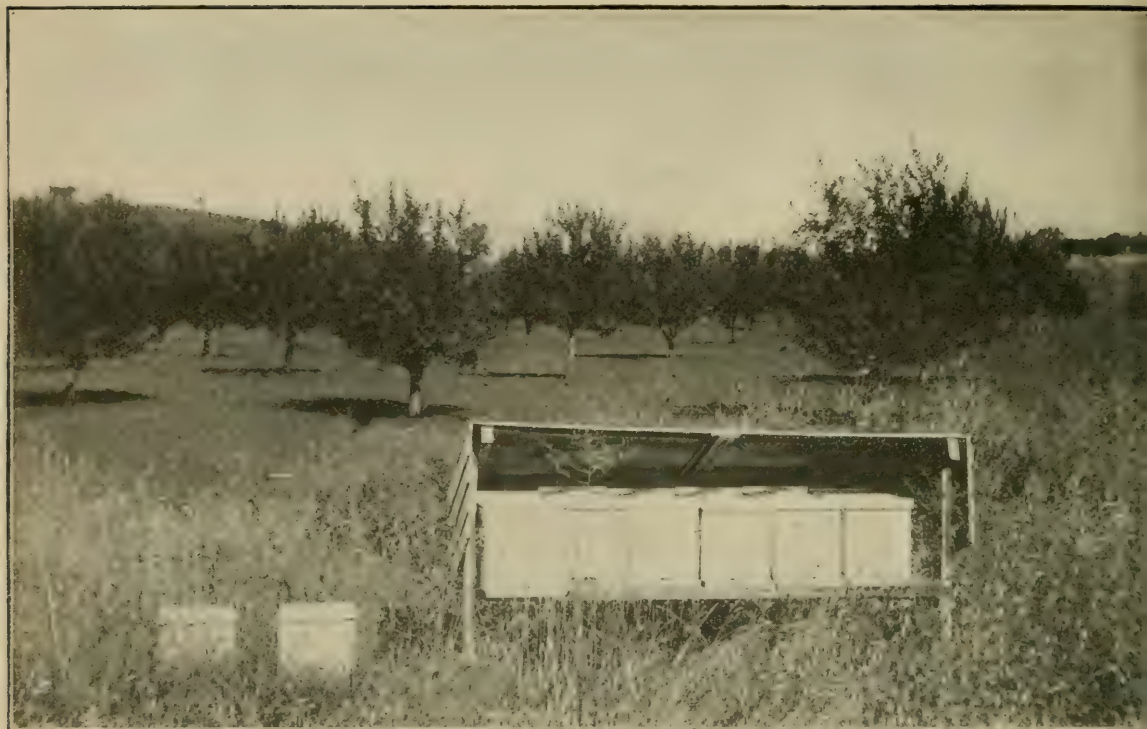


PLATE X.—APIARIES SHOULD BE KEPT IN ORCHARDS, AS THE BEE IS THE BEST AGENT FOR CROSS-POLLINATION.

quantities to insure cross-pollination. To substantiate his statements the authors carried on some experiments with plums, as outlined by him.

To determine whether apple pollen was carried through the air by the wind in sufficient quantities to insure cross-pollination, experiments were conducted in the following manner. Small glass slides, one by three inches, were smeared with vaseline and placed at different distances and at different heights from certain large trees in the orchard. In this case, two of the largest trees in the orchard, the Rome Beauty and the Mammoth Black Twig, were selected. After an exposure of twenty-four hours the slides were taken to the laboratory and examined under the microscope. The following indicates results obtained:

TABLE I.—SHOWING DISTRIBUTION OF POLLEN BY WIND.

Slide number.	Distance from trunk of tree.	Height of slides.	Number of pollen grains.
1	4 feet	On ground	18
2	12 feet	6 feet	9
3	15 feet	4 feet	11
4	15 feet	6 feet	8
5	20 feet	9 feet	6
6	30 feet	6 feet	7

During the experiment a strong north wind was blowing, and the trees were in

the height of their blooming period. The conclusion to be drawn from this experiment is that the wind can not be relied upon as an agency to transfer pollen from tree to tree throughout the orchard.

To verify our last experiment the following work was carried on: A seven-year old tree containing 1500 blossoms was emasculated and left exposed to the wind and insect visitation. The object of this experiment was two-fold: First, to determine if pollen was transmitted through the air in sufficient quantities to insure cross-pollination; second, to determine if removal of the floral part of the blossom would affect the visits of insects. The tree operated upon was located twenty feet from another tree that blossomed profusely. It is generally conceded by many experimenters that the honey-bee is attracted to the blossom by the inflorescence. The results obtained will be a fair index as to the truth of this statement. Out of the fifteen hundred blossoms emasculated, only five set fruit. During the whole period that the pistils of these blossoms remained receptive, only eight bees visited the tree. More than twice that number were seen in one half hour on the tree twenty feet away. Since only a small portion of the emasculated blossoms set fruit, it is manifest that pollen is not transmitted through the air in sufficient quantities to in-

sure cross-pollination. While this experiment demonstrated the fact that bees will visit trees when the floral part of the blossom is removed, they are not attracted in sufficient numbers to insure perfect pollination. It is apparent that the showy petals of the blossoms aid materially in attracting the bees. The blossom is well supplied with nectar, and the open character of the nectary makes it accessible to almost all insects. The bees, in trying to reach the nectar, brush against the anthers and carry away with them on their hairy legs and abdomen large quantities of pollen. The insects in visiting other blossoms transfer some of the foreign pollen to these pistils. Since the wind aids so little in cross-pollination it is evident that the various insects, especially the bees, are carriers of pollen.

As the assurance of a crop depends upon insects as distributors of the pollen, it is necessary that apiaries be established in the different fruit sections. With favorable climatic conditions and proper planting of varieties the bees would insure pollination.

SELF-STERILE AND SELF-FERTILE VARIETIES.

A knowledge of the sterile and fertile varieties is essential in pollination work before any definite investigations can be conducted. A sterile variety is one that will not fertilize its ovule with its own pollen, while a fertile variety is one that will perform this function. Since investigators have found that climatic conditions influence greatly the sterility and fertility of a variety, it is doubly important that this experiment be demonstrated in every locality, especially when a wide variance is found in the climate. Eastern conditions are hardly applicable to those found in the West.

The method usually followed to ascertain this question was to inclose the blossoms in cloth or manilla bags before they opened, thus removing all danger of foreign pollen from insect visitation. After blossoms open and the anthers expand, the pollen is scattered on the several stigmas; and if the blossoms set fruit it is evident that the variety is self fertile; but, on the other hand, if the pistil shrivels and dries up it is sufficient evidence that the variety is self-sterile. For this experiment it is very important that the right branches be selected. Outside branches should be chosen, as they are more favorably situated. In every case all the open blossoms should be removed before sacking. Too much stress can not be placed upon this important question if accurate results are to be realized.

In 1907 three grades of bags were used, namely, the manilla paper bag, the fine and the coarse cheese-cloth bags. Since inclosing blossoms in bags is subjecting them to unnatural conditions, these three styles were selected in order to detect, if possible, any difference that might arise in the setting of fruits. As the effectiveness of the three bags was the same, in 1908 we confined ourselves to the manilla bags.—*Better Fruit.*

BEE-KEEPING IN HAWAII.

BY ALBERT F. JUDD,

President of the Hawaiian Bee-keepers' Association.

Bee-keeping in Hawaii can not be understood without appreciating some geographical facts. Hawaii is north of the equator. It is a full-fledged organized territory of the United States, and consists of eight inhabited islands. It is just as much a part of the United States, so far as the laws go, as the Territory of New Mexico or Arizona. It is a white man's country, although the majority of residents are Chinese and Japanese. In area the islands equal approximately the area of Connecticut. We have two mountains on the large island of Hawaii (from which the group takes its name) each of which is very nearly 14,000 feet high. We have all degrees of climate except the intensely hot climate of the pure tropics. A glance at the map will show that the islands are close to the Tropic of Cancer. The cool ocean currents from the Pacific Coast, with the northeast trade winds, make the climate never oppressive, even at sea-level.

The first honey-bees were introduced into the islands in 1857. In the '90's, bee-keeping began as an industry. Its beginning was slow, and it was not until January, 1907, that the bee-keepers came together and formed the Hawaiian Bee-keepers' Association. Our present membership is thirty-seven, and includes all those engaged in the production of honey and wax for profit, besides others interested in the industry scientifically or for pleasure.

The honey and wax industry in this Territory is valued at approximately \$200,000. About \$30,000 worth of honey was produced during 1907, and \$6000 worth of wax. We estimate the number of colonies at present in the Territory at 20,000, and it is believed that this number can be doubled. If this is done, the normal honey flow is expected to produce about \$100,000 worth of honey and wax. The bee-keepers of Hawaii spend annually between \$2000 and \$3000 for supplies, most, if not all, of which come from the mainland of the United States.

There is at present in our association a spirit of coöperation, not only among the members—resulting in an interchange of ideas on the many problems existing in the apiaries and in the marketing of the product—but also between the association and the various officials of the Department of Agriculture at Washington and the local agricultural station under whose jurisdiction matters pertaining to the industry more directly come.

At the present time the diseases of American or European foul brood are not found in the Territory. We have secured protection from the introduction of these diseases by legislation.

Another work that our association has taken up is the introduction of plants and trees to improve the bee pasturage, and satisfactory progress has been made. The food

and drug act of June 30, 1906, passed by Congress, has brought Hawaiian honeys into prominence because of the chemical composition of some of the honeys elaborated by our bees from honey-dew, and we assisted in adjusting these matters by sending Mr. D. L. Van Dine, Entomologist of the Hawaii Experiment Station, to Washington. Our association also has had as its guest, recently, Dr. E. F. Phillips, in charge of the office of apiculture at Washington, who has made an examination of bee-keeping in Hawaii, and whose report thereon is awaited by us with interest.

We appreciate the opportunity afforded by GLEANINGS to get in touch with the industry on the mainland. We are open to suggestions for improvement. Any thing that can improve the honey-bee and its products is eagerly sought for by us.

NOTES ON TRANSFERRING.

Tools and Appliances for the Same; the Direct vs. the Indirect Method of Transferring.

BY F. DUNDAS TODD.

In the past two years I have been concerned with the transferring of over three dozen frame hives and one box hive to the style that I favor, so that I have had a chance to improve a little on the procedure that I described in an article two years ago. I have worked both the direct and the indirect systems; but after taking into consideration all the factors, methods, and results I can not make up my mind which is better.

Direct transferring is an occupation I would not of choice care to follow up day after day for a few months; but, on the other hand, it has ceased to have any terrors for me, as, with suitable arrangements and the aid of an assistant, I have handled three hives per hour for several hours in succession.

In direct transferring one gets through with the job at once; the hive is speedily at work in a normal condition, and, best of all, the proposition is off one's mind. My experience with indirect transferring (or what is known as the Heddon method*) was in a poor season, and so I saw it at its worst; but it took over three months to get rid of the last of the odd-sized frames, and all the time I felt I was hindering the work of the bees.

In transferring direct I feel I have made some new departures that are advantageous. The slop of honey annoyed me greatly, but I hit upon the idea of doing all the cutting of the combs and all the fitting of them into the frames in a tray whose dimensions are 12×20×2 inches; in fact, one of my feeder trays, whenever it got sloppy it was a simple matter to turn the hose pipe on it when such was handy, or to rinse it out with a pailful of water. In actual practice I found it neces-

sary to wash the tray after a hive was treated, and no oftener. On my left hand I had a similar tray for reserve bits of comb; on the right was a pail into which the scraps were dropped, these being made up principally of drone comb.

In transferring my own hives I had the use of a barn with a screen door so I could carry in two frames at a time, and work without being bothered by the bees. Of course, I wore a veil; but my fingers were uncovered from the knuckles down, and I can not recall having received a sting. When helping a friend with nine hives I worked in a barn without a screen door. He carried the combs; I did the cutting and fitting; but it was not until we got to the last hive that I began to get my fingers stung. By that time a steady stream of bees was working all around, so I had to select the spots before I touched a comb. Occasionally I guessed; and whenever I guessed wrong—well, I quickly found out the difference between bee and no bee. When the job was finished, there was not a bit of slop on the bench or floor to indicate that about 80 combs had been cut to pieces; and this, too, in August, when combs were heavy with winter stores.

Using the shallow extracting-frame I have rarely any call for string. Wire nails about two inches long are good enough. When the comb neatly fits the frame, all that is necessary is to insert nails in each of the four wire holes at the ends of the frames; then with an awl bore a hole through the middle of the top-bar; push in another nail, and the frame is ready for the hive. To get an exact fit, I find the best thing to do is to have a piece of board the exact size of the inner dimensions of the frame, and use that as a guide, for one gets perfectly square cuts; but if we use the frame itself, the cut is generally on the angle—at least that is my experience.

With pieces of comb smaller than the frame area I find it best to work to square-cornered shapes, trying always to get pieces reaching from top to bottom of the frame. Extra nails in the top and bottom bars within an inch of the joining of the pieces of comb generally keep all in shape. There is much virtue in a tight fit, so I never hesitate to squeeze a scrap of comb into a solid mass and force it between the side of the frame and the comb. The bees remove these in due time.

In the season of 1909 I tried indirect transferring with over a dozen hives—some of them Gallups, with frames about a foot square; some almost Langstroths; others, Jumbos. The spring had been backward, so it was not until the end of May that I could start the campaign. As opportunity offered, I transferred the empty combs and placed them in a two-story divisible hive; then the old frames were added. The Gallup frames, being short, had to be provided with extra top-bars, which were screwed to the old ones. While some other frames that were too long had to be shortened. Any way, bit by bit I got all the frames into divisible hives, always

* For a description of this method see the A B C and X Y Z of Bee Culture, under the head of "Transferring."

working the old frames to the sides as the hives grew stronger; then when they were clear of brood they were removed and transferred. The season being a blank one, new combs were built slowly, and I had no spare ones, so it took until the end of August, over three months, to get rid of the last frames. In an average season I fancy six weeks would be enough.

Whatever may be the usual conditions I don't know; but this season I noted particularly the bees speedily united pieces of comb whose line of contact was perpendicular; but they merely gnawed the edges above and below when the junction was horizontal. None of such combs were put into use, so I have them stored away, and will try them again next season, when the honey-flow is on, and see what the bees will do about them.

Victoria, B. C.

NO CARBOLIC ACID USED IN SPRAYING FRUIT-TREES.

BY R. F. HOLTERMANN.

That carbohc acid will prevent the visits of bees I am quite sure, for I have used it frequently to drive the bees out of comb-honey supers—a plan I learned from European bee-keepers. A weak solution, one that will not burn the skin, is prepared, a cloth dipped in it, and wrung out. This cloth is then laid on top of the supers, and the bees will leave the sections with a rush. No doubt this same odor would also keep the bees away from the blossoms.

But here in Canada the fruit-growers find that they are jeopardizing their crop if they spray the trees while in bloom. Just think of covering the sensitive and delicate portions of the blossom with a spraying solution! The pollen would very likely be injured and kept from being distributed, and the portion of the blossom to receive the pollen would in many instances not be in the right condition. The addition of carbohc acid would not overcome this difficulty for the fruit-grower. So far as I know, there is less and less of this practice of spraying trees in bloom in our country. In an orchard where some varieties or kinds of fruit bloom sooner than others, there is a strong temptation to spray all at one time, so some are apt to be sprayed while in bloom; but I have been told of very bad effects to the crop of fruit after such work, and I fancy that this fact is now pretty well known.

In regard to the use of carbohc acid, I wrote to Mr. P. W. Hodgetts, Department of Agriculture for Ontario, who is secretary of the Ontario Fruit-growers' Association as well as of the Ontario Bee-keepers' Association. I received the following reply:

Dear Mr. Holtermann:—Yours of the 18th is at hand. So far as I know I have never heard of any of our fruit-growers using carbohc acid for the purpose of preventing bees from visiting fruit-blossoms. Carbohc acid is not used in any of the formulae that we send out from this office for the spraying of fruit-trees at blossom time. It is used in a limited way in connection with some of the washes for scale insects in cer-

tain sections of the Western States, but very little in this country. It is also used to replace the Bordeaux mixture in grape-spraying by a few men in the Niagara district, but is not recommended by this Department.

P. W. HODGETTS.

Toronto, Jan. 21, 1910.

BEE-KEEPING NOTES FROM TEXAS.

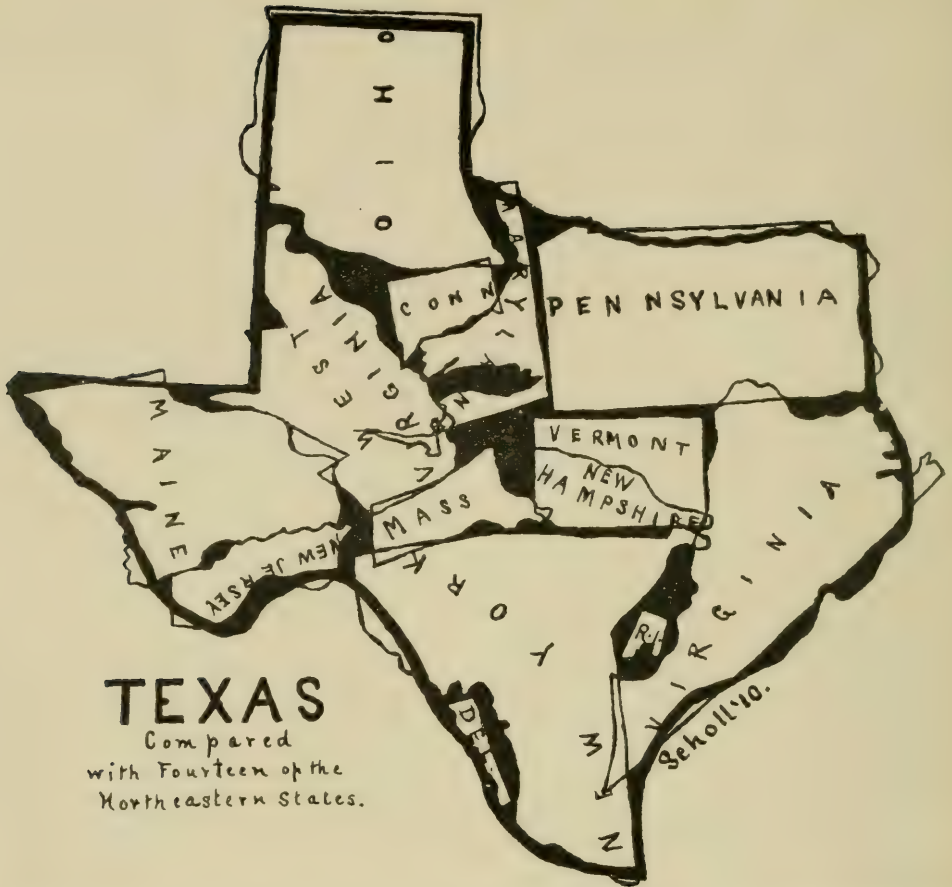
The Widely Differing Conditions of Climate, etc., in the Lone-star State.

BY LOUIS H. SCHOLL.

With the splendid prospects for one more of those good old-time honey crops in our charming southern country there has been a marked revival of interest in bee-keeping and a renewed activity among the bee-keepers. And not only have our own bee-keepers been influenced, but it seems from the numerous inquiries from outsiders concerning Texas that this influence has spread to all parts of the country, attracting more interest to bee-keeping in the great Lone Star State than in any other country at the present time. We are proud of this, for no other country (we call Texas a "country," for she is too big for a State) has made such great strides. While Texas is the leading State in the Union as a honey-producer, yet bee-keeping here has not nearly reached that stage of development that exists in most of the other States. The annual output of honey is enormous, but we know that there are thousands of acres wasting millions of pounds of nectar that could be saved by the up-to-date progressive bee-keeper.

It is impossible to give any idea in figures of the honey produced in this State in average years, as it has been impossible to obtain any thing like reliable statistics. This is due to the fact that almost the entire product is consumed at home, a very small part of it going outside of the State, and then only into adjoining ones. In that sense Texas is a State of its own in the production of honey, consuming what she produces herself. It is to be hoped that the new census will aid us in ascertaining approximately, at least, what our annual product has been the past year. From this it would then be possible to draw an idea, but an idea only, as, since the honey crop was a short one the past year, the showing that will be made in the census figures will by no means give us the output of an average year. But the fact remains that Texas is the leading State for output of honey, number of colonies of bees, and as a honey-producing State as regards the vastness of its area, its great variety of locations, soils, and climatic conditions.

On this account I wish to call the reader's attention to a few facts. After trying to cover up Texas with fourteen other States, as shown in the engraving herewith, it was found that it was still quite in evidence, as shown by the black parts of the picture. Now, this shows the vastness of its territory as compared with that of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island,



Connecticut, Maryland, Delaware, New Jersey, New York, Pennsylvania, Virginia, West Virginia, and Ohio—the whole of northeastern United States. Imagine the great number of localities there must be in this vast stretch of country, from north to south and east to west! Then the variety of bee-keeping conditions, both in latitude and altitude, must be taken into consideration. While we have conditions not far different from those of some of the States of the North, we also have conditions of the very tropics. These will be described a little more fully in a succeeding article.

But there is a reason why this comparative map is shown. Letters by the score have come to me, something on this order: "I would deem it a great favor if you would take just enough time to tell me in a few words where I can find a good location, on a railroad, near school and church, and close to some city, with good roads to market my crop. I expect to pull up stakes here, but would like to have you tell me where to go before making the move to a new place." One of the main things left out in the letter above is that the writer has not mentioned the kind of church he belonged to so I might

have looked after that also in selecting the suitable spot.

Now look at the map before us and let us ask ourselves this question: Am I thoroughly familiar with bee-keeping matters and the bee-keeping locations of the fourteen States, from Maine, Indiana, and down to the Carolinas? Could I tell a man "from Texas" just where he might locate in a little "nest" as is requested in the sample of letter above? I must admit that I could not. Now consider the vast difference in climatic and other conditions, more especially the flora of that State, which exist in Texas—much more varied than throughout the fourteen States here shown, stretched over a much greater area, and then ask whether it is really right to write for such information to one single little "six-foot-three" fellow, who is only an invisible speck on the face of the great Long Horn State.

Considering all the above, the best way for a prospective Texas bee-keeper to pursue is to take advantage of one of the many cheap home-seekers' excursions run every summer, to come to Texas, spend some time here, look over the ground thoroughly, select a place, and then, and not until then,

pull up stakes where previously located. Then when once here, as a bee-keeper of this great State, the new comer should make up his mind that he is going to like the new place and the *new State*. We want no people here who are always dissatisfied, no matter where they are nor what their lot is. There are such that are always grumbling about their surroundings. We do not need them. But the real, energetic, interested hustler has a chance, if he will try things and stick to it. It must be remembered that we have adverse seasons here sometimes as well as elsewhere; however, these have been comparatively few, and, taking year for year, our seasons have been above the average as compared to other parts of the country. Taking it all in all, Texas bee-keeping has a brilliant future. All we have to do is to stick to our business, improve as we go along, and our efforts will not be in vain.

New Braunfels, Texas.

COMB VS. EXTRACTED HONEY.

Comparative Results of Comb and Extracted Honey Production in the Buckwheat Regions of Eastern New York; Buckwheat as a Honey-plant.

BY FRED G. MASON.

My father began bee keeping in 1864, and continued in the business to the time of his death, in 1898, leaving me at that time with 84 colonies in winter quarters. I was brought up in the business, and often helped him when not otherwise employed. I read the bee-journals from early boyhood. Hearing of E. W. Alexander and his large apiary in New York I became very much interested, and finally managed to spend ten days helping him during the busy season. This was a most profitable and pleasant experience, and I will long remember Mr. Alexander's kindness to me in answering questions and giving me the benefit of his experience and advice.

It was due in a great measure to Mr. Frank Alexander that I was placed in sole charge of a good-sized apiary in the buckwheat country last season. The 226 colonies in this yard had gone into winter quarters in the fall of 1908 in very good condition by reason of a continuous light flow from buckwheat, which kept the bees rearing brood long past the usual time (a condition that was quite reversed last fall). The bees were taken out of the cellar April 2 and 3, 1909, and had a fair flight. By the middle of May the apiary consisted of about 210 colonies which had survived the severest spring weather that I can recall. As soon as fruit-bloom came, weather permitting, I began overhauling the bees, equalizing stores, clipping queens, etc. I soon noticed that most of the honey in the hives was candied as hard as a board, the bees using it of necessity rather than of choice. I reasoned that, as soon as they could obtain new honey in a sufficient

amount to keep up brood-rearing, they would no longer touch this old honey, and it would be in the way, in many cases, enough to curtail brood-rearing sadly. Therefore, as soon as the bees were bringing in new honey sufficiently I began removing this candied honey, substituting the best breeding-combs that I could select from the stock of extracting-combs, always leaving a frame or two of the candied honey for outside frames. I usually selected the lighter combs to remove, for fear that weather conditions might prevent a continued supply of new honey.

On my second trip over the yard I found quite a number of colonies that had almost reached their limit in brood-rearing, and to such colonies I gave a second story containing the best of the empty brood-combs with a comb of candied honey, from which the cappings were removed, next to each side wall. Soon there were great slabs of brood in those second stories, and the bees were bringing in clover honey quite freely. I soon reduced the colonies to one story each, helping out the weaker ones with sealed brood from the stronger ones, and forming new colonies with extra combs of brood not required for this purpose. These new colonies were, for the most part, supplied with laying queens. This apiary was equipped for both comb and extracted honey, and I was obliged to run for both, even though I already had a preference. The prospects for next season were good, sweet clover being quite abundant, and many fields of alsike giving promise of full bloom. Basswood, moreover, was plentiful and the trees were a sight to behold, being weighted down with buds the like of which I had never seen before.

In placing comb and extracting-supers on the hives I was very careful to pick out the most powerful colonies for the comb-honey supers, leaving the rest for the extracting-supers, and after finishing this work I found that the comb-honey colonies outnumbered the others. I had plenty of bait-sections, so I usually used ten in each super, five of them being sections that had perhaps been worked on a little, the other five being quite well drawn out.

The white honey-flow did not prove to be as great as I expected, for, with the exception of a few days, the weather was anything but ideal. The nights were very cold, and the days were nearly always cool and often windy. Along in April the bees did not usually go to the fields until the morning was well advanced, and by three o'clock work was almost at a standstill because of the cold. Notwithstanding these adverse conditions I secured what many would call a fair crop of white honey, and removed both the comb and extracted honey before the bees made much headway on buckwheat. At least 90 per cent of the extracted honey was sealed when removed. I soon had empty supers in place ready for the buckwheat crop.

I was very much surprised when I came to compare the results of the comb and ex-

tracted-honey colonies after this light flow I found that the extracted colonies eclipsed the others in the amount of surplus honey secured, and that, too, at fearful odds as to strength and working force. To be sure, I had made some changes with a few comb-honey colonies on account of their swarming, running them for extracted honey for a short time. In some cases I did not change them back; but still these changes did not greatly affect the result, as they were usually offset in some way.

I decided to take particular pains during the buckwheat flow to determine, if possible, the comparative merits of producing comb and extracted honey. I again used the most powerful colonies for comb honey, selecting 120 colonies for this purpose, leaving the remaining 100 for extracted honey. The first buckwheat in bloom was a large field of Japanese. The weather was quite satisfactory, and the bees were doing well. Other fields began to grow white; but the weather became less and less favorable until the buckwheat reached its prime, while the bees were shut in entirely for about twelve days on account of the cold and wind. There was a large acreage sown to buckwheat, and quite a portion of it was late, so I hoped that the bees might yet have a fair show. It lasted very late, and the weather warmed up a little; but the buckwheat did not yield much, in spite of the fact that there had been no frosts. I began removing both comb and extracted honey, using bee-escapes. It took two days or more for the bees to get down out of the supers, yet this was by far the most satisfactory way.

The extracted colonies yielded all of 5400 lbs. of nice honey, the greater part of it being sealed when removed, and there was plenty left for winter stores, with the exception, perhaps, of two or three. The comb-honey colonies produced less than 2500 lbs., much of which was not well finished, and these colonies also were left heavy in stores for winter. The total crop for the season amounted to something over seven tons. If the yard had been run for extracted honey wholly, there would have been much better returns, together with a smaller cost of labor.

AMOUNT OF BUCKWHEAT NEAR DELANSON.

When I was helping Mr. Alexander I asked him what he thought the acreage of buckwheat was within his bee-range; and after a moment he said it was probably all of 1500 acres. I did not question his assertion in the least; but it was my privilege last fall to prove to my satisfaction that Mr. Alexander's estimate was most conservative. I remember reading of Mr. Orton's visit to Mr. Alexander in the fall of 1908, as mentioned in his article in GLEANINGS, in which he stated that he was a farmer and could judge the size of fields fairly accurately, and that from Schenectady to Delanson, a distance of fifteen miles, he had estimated the number of acres as being not more than forty-five. Now, if Mr. Orton had made a complete circuit of the Alexander yard, for $1\frac{1}{2}$ miles in every direction, he would have found single fields that contain-

ed more than forty-five acres. I interviewed a local thrasher, this fall, when his season was over, and he told me that he had thrashed over 13,000 bushels within $1\frac{1}{2}$ miles of the yard which I had in charge, and he said he was sure that he had not thrashed half of that which was grown in this space. I asked him what the average yield was per acre, and he said 25 bushels. This would make more than a thousand acres of buckwheat grown within $1\frac{1}{2}$ miles of the apiary. If a radius of two miles were taken there would be more than double this amount—that is, more than 2000 acres of buckwheat that the bees would have access to in fair weather. One season the former owner of the apiary sowed quite a field of buckwheat earlier than any sown by his neighbors. The season happened to be such that he obtained practically all of his buckwheat honey that year from this one field. I mention this to show that an extra large acreage of buckwheat often cuts but little figure in the crop of honey. Had the area sown to buckwheat in this section last season been so increased as to make one continuous field to the limit of the bees' flight, I very much doubt whether it would have added much if any to the amount of honey secured. My belief is that a section of country that has, say, 500 acres of buckwheat in bloom within easy range of an apiary, will produce all the nectar that a large apiary can bring in. Much more than this amount would not help the bees during the time they were gathering their loads of nectar, whether the blossoms were yielding bountifully or meagerly.

Fabius, N. Y.

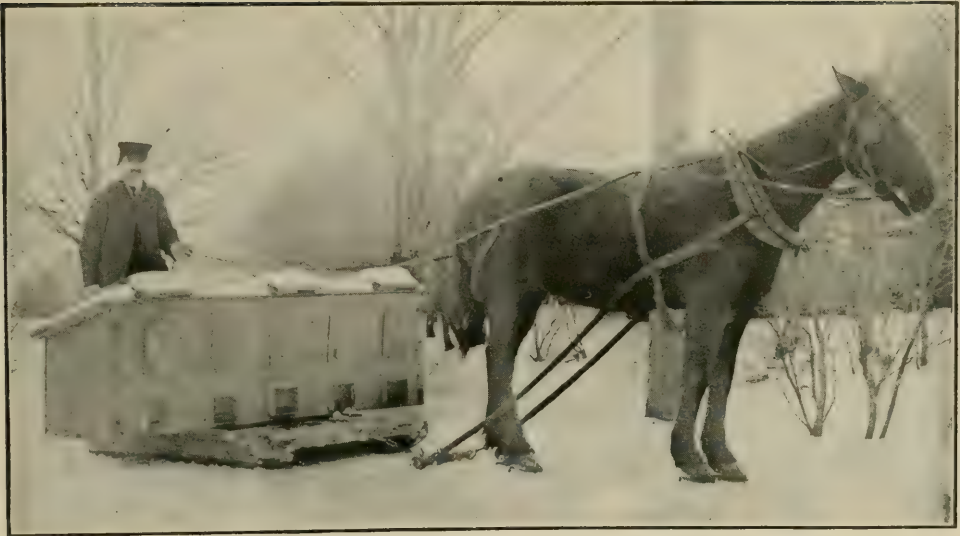
MOVING BEES UNDER IDEAL CONDITIONS.

BY G. C. GREINER.

The various experiences of a lifetime had forced me to believe that moving bees, even under the most favorable conditions, was an unpleasant job. But my last venture of this kind has convinced me that it can be done, not only comfortably but with a considerable degree of enjoyment as a winter sport.

Last May I moved about half a mile from the old home, and the question arose as to how and when it would be best to move the bees. They could have been moved at the same time; but their former location being so near by, and the season far enough advanced so that all field workers had generally formed their lines, many would undoubtedly have gone back to their former stands and perished.

I decided to leave my bees at the old place during the summer, and work them somewhat like an outyard, intending to move them, during the winter, on snow. This would be an easy matter if the hives could be loaded singly, with perhaps the help of a boy, on to some kind of sleigh rig when we had sleighing. But the bees had to be packed for winter when they were in proper condition before the snow came; and after they



G. C. GREINER'S METHOD OF MOVING COLONY SLEDS IN WINTER.

were packed they were in sheds holding five colonies each, and weighing about 500 lbs. To load one of these sheds and handle it as carefully as bees should be handled would require a number of hands, which would be difficult to find just when I wanted them.

At first the undertaking looked a little dis-

being raised. The tool at the left is the lifter: the drawing makes it plain enough so that a description is not necessary. With the roller attachment, which I consider a great advantage, it works so smoothly that it does not jar the sheds in the least when being operated.

In their natural positions all sheds are blocked up about six inches from the ground; and to load them, each one had to be raised from four to six inches from their foundation. To do this the left end of the shed is raised first, just high enough to let the little bench take its place. Then the other end is raised about

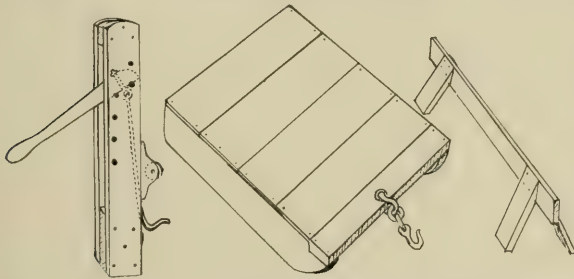


FIG. 1.—TOOLS FOR LOADING AND MOVING SHEDS OF BEES.

couraging, but after manufacturing the necessary tools and contrivances I succeeded so well that I did the whole business easily without the help of a single person.

The tools I used in loading and moving are shown at Fig. 1. In the center is the rig I used for moving. It is a combination of sleigh and stoneboat. The runners are 3×6-in. timbers, with a level one-inch platform on top. At the right is a bench about 12 in. high, made like a common saw-horse. It is used to support the shed after

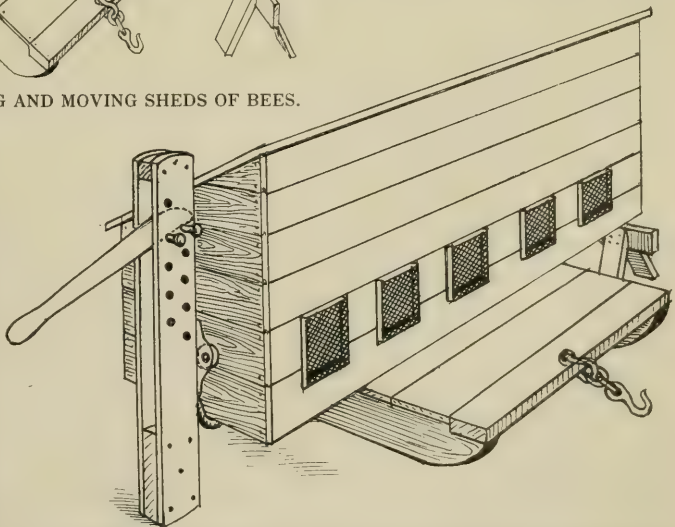


FIG. 2.—ELEVATED SHED WITH SLED IN PLACE READY FOR MOVING.

the same distance from the ground, and the sled put in its proper place. Fig. 2 shows the shed in that position with the sled in its place ready for loading.

When unloading, the shed is first raised from the sled in the same way as when being loaded; and after the sled is removed, the shed is lowered on to its foundation-blocks again.

By the use of the tools here described I was able to handle all sheds in such a steady, quiet way that the bees hardly noticed the operation. The conditions of the weather were also very favorable for the job. We had from 8 to 10 inches of fresh snow; and as I selected thawy days for the moving, when the old snow below was soft, the trips were made without a jar, jolt, or jump to disturb the bees. In only a very few instances could small clusters be seen inside of the screens, and most of them went back before their sheds were unloaded.

LaSalle, N. Y.

RESULTS OF BEE-KEEPING LEARNED FROM BOOKS.

A History of a Beginner's Mistakes and Experiences.

BY MARTHA K. PURSELL.

Continued from last issue.

CHAPTER TWO.

All of my colonies wintered well except No. 6, which perished from too much coddling. Thus the spring count was three hives.

1. Golden bees No. 2.

2. Leather-colored Italians, Ferris hive. This later became Nos. 3 and 4, as I found it too heavy to work as one.

3. Hybrids with poor queen (No. 5).

No. 2 swarmed, so after the flow was on there were five colonies at work.

All were given section supers except No. 5, which produced all its honey in Hoffman frames.

Nos. 2 and 3 were shaken upon shallow combs at the time they were supered. The deep combs were left alongside until all bees had emerged, when they were shaken into their respective hives. Instead of going into sections at once, each of these hives filled the upper set of combs solid with white honey. This was removed, and the sections placed just above the brood, when the work went forward as planned. A story of foundation was put under all when the honey was removed. The honey was so easily produced, and was of such fine quality, that in July five more stands of bees were bought, as I hoped for a fall crop. In this I was disappointed. The crop was a little over 200 lbs. There were 92 Danz. sections, and the rest was extracted. There would have been about 60 lbs. more of extracted, but the heavy combs would not bear the strain of the extractor, so they were reserved for spring feeding.

All hives have sufficient stores to last till fruit bloom, and have young queens. No. 3 has superseded its queen, but both queens were in the hive at the last examination. If both live until warm weather comes, the plan is to use the mother as a breeding-queen, in a nucleus hive, and thus Italianize the five hybrid colonies last purchased.

THINGS LEARNED DURING THE SECOND YEAR.

1. Necessity of knowing one's own location, and of having the initiative in one's own business. Had I read before the season what I have later, I am sure we could have secured more honey. Being desirous of having all we produced of superior quality, we sacrificed quantity to an unnecessary degree. The fancy extracted sold for 30 cts. per lb., and the comb for 25 cts. per section, and in my own town I could have sold several times as much.

2. To keep the overstrong colonies busy before the flow, in drawing out brood and extracting combs.

3. To work every strong colony, not busy drawing combs, in two stories, preferably having the upper one of shallow combs. Should there be an early surplus, this will keep the honey above and removable when the time comes for section supers. The lower story will thus be all used for brood, and be extra strong at the right time.

4. Never to buy bees without careful examination before purchase.

PLANS FOR THE THIRD YEAR.

There are ten colonies, three in sectional hives, group one; four in ten frame, dovetailed, group two; three in Danz., group three.

When I find out which of these hives I prefer, I intend to confine myself to one kind of brood-chamber, using the others for supers, but now anticipate much pleasure with the three small groups.

In order to get a maximum crop I shall avoid lifting and prevent swarming. Group No. 1 is to be worked somewhat as Mr. Scholl does with a trial of some of Mr. Hand's kinks. Group No. 2 I should have preferred to work according to Mr. Doolittle's plan, but could not get enough deep combs drawn last year to have two sets for each hive. I think early honey can be prevented from clogging the brood-chamber by putting on a half story of combs or foundation, just as soon as the strength will allow — if possible, before fruit-bloom. Then if these half-stories are filled with honey I can put two together, using Doolittle's plans and transferring to sectional hives at one operation. This will also prevent swarming and give increase.

One of the Danz. hives has two stories, both of which are almost solid with honey. In August, two colonies were united as per "Facts about Bees," as I intended to extract one story but found it impossible, as the combs were not wired and were insufficiently attached to sides and bottoms. These Danz. brood-bodies were among the five hives bought in July, and have so much drone comb that many frames will have to

be rejected. All these combs were made from starters by swarms, so my policy will be to use full sheets for swarms, either natural or forced.

As I do not know that I shall want any more Danz. brood-bodies, my intention is to work these colonies in the same way as group two, up to the time of the flow, when the first section super will be put on between the brood-chamber and shallow story, removing the latter when work is well started in super. This shallow story can be put under all on the bottom-board. I intend to try this to see whether the bees will carry up the unsealed honey it contains, as Mr. Hand and others say they will. Otherwise these shallow supers can be put on hives run for extracted, used for increase or piled up for future use, or to fill combs for winter.

As I can sell extracted honey of superfine quality, in small but dainty containers, at the same price as section honey, my intention is to run all hives for extracted at the end of the season, using section supers only during the rush of the clover flow, and have all sections fancy.

I intend trying the method used by Mr. Townsend and others of having extracting-combs on the outside of all supers. The new N super has frames exchangeable with shallow extracting-frames, and the Danz. super can use the shallow Danz. frames. If this plan does not prove desirable, the frames can be used in sectional hives or in extracting-supers.

Mr. Hand has strong colonies drawing out foundation in sections during fruit-bloom. Mr. Danzenbaker does the same, and also has the colonies, not needed to work on "go backs," at work drawing out sections for use the following season. I shall also try this plan.

The producers of honey by the barrel may like extracting from brood-chambers, doing without excluders and using all frames interchangeably sometimes for brood and later for honey, but I am yet to be converted to a belief that those methods are for the producer who desires the whitest and choicest of fancy honey.

Mr. Alexander proves that a home yard can be made strong much sooner by judicious feeding of dilute syrup, thus preventing the loss of bees which go for water and never get back. I have four Alexander feeders and two division-board feeders. I will use these and take notes; but outside feeders wear out the bees, invite robbing, and supply the neighbors, so I can not afford them.

I intend to follow out Dr. Miller's plans of records and examination of brood-chambers while swarms may be expected. He has shown conclusively that the hive that does not swarm gets the largest surplus of comb honey.

Alexander's tin tags to indicate age and value of queens are good enough for me, as is his way of getting increase when running for extracted and of saving weak colonies by putting them over strong ones. But I would

never unite at any season without a sheet of newspaper between. This is as sure as and easier than a screen which must be removed and thus disturb them later. I do not believe any other way of using two queens is practicable unless one is working the sectional hive.

Being unable to manage the towers that Mr. Ferris must build with his two-queen method I intend to work out a simplification of Mr. Hand's sleight-of-hand tricks. My season does not oblige me to complete sections in thirteen days, so I hope to raise comb honey and still keep alive. It is no wonder that he prefers queen-rearing.

Wenonah, Gloucester Co., N. J.

BEE DISEASES IN CANADA.

A Case Where the Alexander Plan was a Failure; the M'Evoy Method Easier and Surer, and Less Expensive all Around.

BY J. L. BYER.

That article of E. M. Gibson's, page 125, tells exactly how the two methods of treating black brood work out in practice, as was proved in the work done by Mr. Warrington Scott, the first man in Ontario who had to battle with the disease. Although the colonies to be treated by the Alexander method were first made very strong, yet, after being queenless for 21 days, by the time the young force of bees came into the field of action the colonies were so weak as to be useless for the gathering of a surplus. While only comparatively few of the colonies so treated remained free from the disease, and the plan of removing all combs and shaking out to foundation was much more successful, Mr. Scott emphatically declares that, even if the Alexander method cured as many cases as the shaking plan, he would still prefer the latter method as being more economical in the end, all things considered. If a colony is made queenless right in the honey-flow, not nearly as good results will be obtained in the matter of securing a surplus as if the bees were thrown out to foundation. Indeed, there are quite a few who now claim that it pays to shake all colonies out to foundation, even if no disease is present; and personally we are inclined to accept this view provided a quick heavy flow of honey occurs right after the shaking and does not continue for more than two weeks or ten days. To be sure, it is well to remember that, as pointed out by both Mr. Gibson and the editor, locality may make a big difference in this matter of treatment, as in Mr. Alexander's section a lot of work could be done quite early in the season and still leave the bees in fair shape for the late flow that he so largely depended on. In a section where the only flow is from clover, entirely different methods must prevail if a surplus is to be obtained; and the shaking method, it seems to me, is the one for such places.

The modified plan as practiced by Dr. Mil-

ler reduces the period of queenlessness by quite a margin; but as our experience goes in the matter so far, it is not very likely that Mr. Scott will try any thing short of the more radical methods, in view of the pronounced failures experienced by using the full 21 days' term of queenlessness. Please do not think I am belittling Dr. Miller's efforts in the least, as I believe with all others that the plan has been a success with him; but as to such methods working out that way in Eastern Ontario at the present time—well, I for one sincerely wish that the remote success were a possibility.

In a footnote to a recent article of mine on this subject the editor does not think there is a difference in virulence, but rather inclines to the view that the difference in bees may explain matters. Regarding the virulence I can give no positive statement, as I have seen the disease in only one section, and can not give comparative evidence. As to the bees, it is only fair to say that nearly all in the affected district are blacks—regular old stagers that can sting a little quicker, and oftener, than any bees I have ever encountered. However, Mr. Scott's bees are now all pure Italians, and this past season an out-apiary of as pure stock as can be found on the continent was affected, and I believe they treated about 80 out of some 100 colonies.

While on this subject of black brood, I might say I am pleased to see D. M. MacDonald, of Scotland, also Editor Hurley, of the *Canadian Bee Journal*, making a vigorous kick against the term "European foul brood." The name has led to endless confusion, and why should we have any thing better (or worse) than the term "black brood," which all will understand? What's in a name, any way, so long as it expresses intelligently what we want to refer to? "Foul brood" is not such a high-sounding or scientific term by any means, and yet it answers its purpose finely. Why not drop "European foul brood" and say "black brood," and cut out all chances of confusion in the nomenclature of the two diseases? That the term does lead to confusion is evident in almost every bee-journal that comes to hand; and even Mr. Gibson, in his excellent article, gives us a hint in that line, as I believe no one who has ever handled genuine foul brood will think it is a possibility to cure the disease without destroying the combs. Therefore, instead of saying, as he does, that 21 days is not long enough for a colony to be queenless in order to effect a cure of American foul brood, better by far leave out the latter disease when discussing methods of curing black brood, as 121 days of queenlessness for a colony affected with genuine foul brood would be no more effective than 21 days, unless the longer term would give a chance for the wax-moths to get things cleaned up out of the way.

A BEE-LINE MAY NOT BE A STRAIGHT LINE.

As Raleigh Thompson points out, p. 125, a *bee-line* is not necessarily a straight line from the hive to a given point, even if we

all have heard the oft-repeated phrase, "as straight as a bee-line." West of our home apiary, until the last two or three years, there was a strip of high woods about half a mile in width. At the other side of this woods there has always been a lot of alsike grown, and the bees invariably fly around either the south or north end of the woods while going to and from the apiary to the clover-fields. During the flow of honey, if one went close to the woods on the east side no bees could be seen or heard; but on going toward the north or south ends they could be seen by the hundreds, although by taking these courses at least a quarter of a mile more would have to be traversed as compared with a direct course over the tree-tops. At the Cashel yard there is a tall row of spruce-trees directly north of the bees, running east and west; and off at one side of the yard a bit, there is an opening where a few of the trees did not grow well. All the buckwheat grown in reach of the bees has generally been directly north; and many a time have I noticed the bees going and coming through this opening in such swarms that it really seemed as though they would knock against one another in their flight. Really it is wonderful to see the bees from about 100 colonies working on buckwheat during a heavy flow, when practically all of them are going through an opening only a few feet wide. The point I wish to note is that the bees, instead of rising and going directly north in the direction of the buckwheat, rather preferred going west a short distance and then making a tack so as to avoid flying so high over the tree-tops.

While I am inclined to believe that bees are enticed toward nectar by scent, yet I rather doubt that the circumstance related by friend Thompson *proves* the matter. Two years ago there were hundreds of acres of alsike near us, some of it not more than two rods away from the bees, and yet for some reason there was no nectar in the blossoms. Last season we had a tremendous flow from alsike for six or seven days; and after that, although the clover was in bloom for two weeks more, yet hardly any more honey was secreted. How do we know that the field of clover mentioned by Mr. Thompson was yielding nectar previous to the day the bees were noticed working on it? Even if the bees were noticed around small patches near home, yet that does not prove conclusively that the field in question was yielding, as we have often observed that the bees would be working heavily on one field when possibly some other field nearer would have very few bees. Our only theory has been difference in soil conditions, as, generally speaking, the heavier clay soils do better in clover-honey production than do the lighter ones. However, I will admit that it *looks* as though the bees in Mr. Thompson's case did scent the nectar; yet I repeat, it is not a conclusive case by any means.

SHEEP TO KEEP THE GRASS DOWN.

The editor's advice to S. E. Williams, page 124, regarding the good work of sheep in an

apiary for the purpose of keeping down grass is sound, although a word of caution is necessary as to how the hives should be placed to avoid having them turned over on their sides.

At one of my yards the bees are wintered in rough cases, and then the hives are taken out in the spring about fruit-bloom time, and placed in pairs on stands six inches high. As long as the bees are in the cases the sheep in the yard are a fine thing; but as soon as the hives are on the summer stands after being taken out of the packing, I have always considered the sheep a bit dangerous to have in the yard. However, last spring, contrary to my advice, the owner of the orchard wherein the bees are situated let a flock of sheep into the yard about the first of June, thinking no harm would result. As a matter of fact, the same thing had been done in previous years a few times with no trouble. However, it was the old story of "the pitcher that oft goes to the well, etc.," again; and when I went out to the apiary a few days after the sheep had been let in the yard again I found one of my best colonies with the hive lying over on its side, the cover off, frames all jammed together, and most of the brood dead. The hive was righted and frames adjusted, and the bees, depleted in numbers, went to work to make the best of a bad job; indeed, it was about as bad as it could be; for before leaving the yard in the afternoon the queen was found dead, dragged out at the entrance. Of course, that meant no surplus for the season from that colony; and as that apiary averaged over 150 lbs. per colony, we naturally were sorry that we had not cut all the grass ourselves. If the hives are close together the sheep will often get to rubbing themselves, and gradually work in between the hives. This process we have noticed more than once, so the remedy would obviously be to place the hives singly or else so close that not even the head of a sheep could get between. Certainly the presence of sheep in a yard is a nice way to keep the grass down, provided it is so arranged that no hives can be upset.

Mt. Joy, Ontario, Canada.

DIRECTIONS FOR "SPLINTING" FOUNDATION.

BY EMMET B. KIBBE.

I want to put some foundation in Jumbo frames, and not have it sag or buckle if I use medium brood. Will it be best both to wire and splint it? If so, shall I draw the wires taut? Ought I to wire and imbed the wire first, then apply the splints?

Must I have splints long enough to reach to the bottom-bar?

Cincinnati, N. Y.

[We referred these questions to Dr. Miller, who replied as follows:]

The object of pressing splints into foundation in brood-frames is to prevent buckling, to prevent sagging and stretching of the cells in the upper part of the foundation, and especially to secure combs built clear down to the bottom-bars. The splints are placed perpendicularly in the frame, and are about $\frac{3}{4}$ inch shorter than the distance between top-bar and bottom-bar. That $\frac{3}{4}$ -inch space is merely for convenience in putting in, and it does not matter whether it is at the top, at the bottom, or divided between top and bottom.

As the bees are inclined to gnaw at the bottom of the splints, especially when little honey is yielding, some use five-inch splints, putting them at the upper part. This secures against the stretching of cells at the upper part, but with these short splints there must be wiring to prevent bagging at the lower part.

The foundation is fastened to the top-bar the same as when no splints are used, and the foundation is cut to fit close up to each end-bar. A split bottom-bar may be used, allowing the foundation to come down and be fastened between the two parts. One part of the bottom-bar is nailed on when the frame is made, the other after the foundation is in place. Of course the foundation is cut large enough to reach down to the bottom of the bottom-bar. Then at the middle a small nail driven through both parts of the bottom-bar pinches them together, holding the foundation in place firmly.

Instead of the split bottom-bar, the ordinary single bottom-bar may be used. In that case the foundation must be cut to make a close fit at the bottom, and melted wax must be run along the edge of the foundation to fasten it to the bottom-bar. Even if the split bottom-bar be used, it is better to use the melted wax so as to prevent the bees from starting to gnaw. The only object of the split bar is greater convenience in making a fit at the bottom, for with it there is no need to be exact about cutting the bottom of the foundation. After the work is done, the single bar is just as good as the split bar—perhaps better.

To drive the moisture out of the splints and to fill their pores with wax, throw them into wax boiling hot. They will froth up with the air and steam driven out of the splints. When all frothing ceases, take them out of the wax and keep them stirred as they rapidly cool, so they will not be stuck together.

When ready to press the splints in place, the frame with foundation is put on a board the same as for wiring, the board being large enough to fit rather loosely inside the frame, with stops on the edges of the board to allow the foundation to be in the middle of the frame. A heavy black mark is made on the board at the place where each splint is to be laid, the black mark showing through the foundation. The mark will show more plainly if the board be painted white, or if white paper be pasted upon it.

In a brood-frame of usual length a splint is placed at each end about $1\frac{1}{2}$ inches from the end-bar, and another in the middle of the frame. Then, if medium brood foundation is used, a splint is placed midway between each end-splint and the splint at the center. But if light brood foundation is used, two splints will be used in place of each one of the last two splints, the space being equally divided. Thus it will be seen that for medium foundation there will be five splints with spaces between them of about $3\frac{1}{2}$ inches; and for light foundation seven splints with spaces between them of about $2\frac{1}{2}$ inches.

A few splints are thrown into a shallow dish of wax kept only hot enough to be liquid (if boiling hot the splints will melt their way through the foundation), and one by one each splint is lifted with a pair of pliers and laid in place, while a helper presses each splint into the foundation by means of a little board with an edge $\frac{1}{4}$ to $\frac{3}{8}$ inch thick, this edge being kept wet.

Another way that is possibly better, but has not been so thoroughly tried, is this: Instead of using a pair of pliers pick up the splint with the fingers, holding it by one end; dip it into the hot wax as far as possible without touching the wax with the fingers, and then lay it in place, putting next the top bar the dry end, which is held in the fingers. The upper end may not be so well imbedded as if dipped in the wax; but bees are not much inclined to gnaw at the upper end. In this way there is less harm from having the wax very hot, and one can handle the splints more rapidly with the fingers than with the pliers.

For ordinary brood-frames there is no object in having wiring when splints are used. With frames of unusual depth there is a possibility of the foundation bellying out to one side, so it may be well to have a single horizontal wire drawn taut midway between top and bottom, or else two wires some three inches apart, the wire being imbedded before the splints are put in. For extracting-frames, there will be less dan-

ger of combs breaking out in the extractor while they are new if wiring be added, if, indeed, it be thought advisable to use splints at all in extracting-frames.

It is important to keep in mind that bees have a strong inclination to have a passageway between the lower part of the comb and the bottom-bar. If a frame of splinted foundation be given when bees are doing little or nothing, the bees will be pretty sure to dig away this passageway, using the wax gnawed out to help in the upper part of the frame. So such frames should be given to the bees to be drawn out only at a time when honey is yielding well. In an upper story the bees do not care so much to make this passageway.

C. C. MILLER.

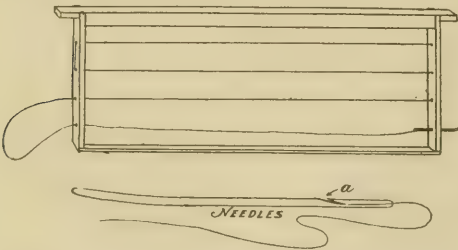
THE METCALFE FRAME-WIRING NEEDLE.

Some Hints about Wiring Frames.

BY O. B. METCALFE ("THE N. M. CHAP").

Having several thousand brood-frames to put together and wire last spring I set about getting up some contrivances to aid in the work. The accompanying cut shows my needle for wiring frames. The tip end of the wire is drawn tightly into the small slot shown at *a*, where it wedges in so tightly that it may be pulled in two before it will slip out. The needle automatically grips the wire at the very end, and so that the wire may be drawn by the needle itself.

When the wire has been threaded through all the holes, the very tip end of it may be tightly wrapped four or five times about the last nail by simply holding the wire just inside the frame firmly with the left hand, while with the right the needle is twisted round and round the partly driven nail, the wire being forced to feed out through the slot as it wraps around the nail. As soon as one gets well on to the trick, the end of the wire will be wound so closely up to the nail as to leave no trace of it after the nail is driven up. The operator does not get his fingers pricked while doing it, and nothing is left to prick fingers in the future.



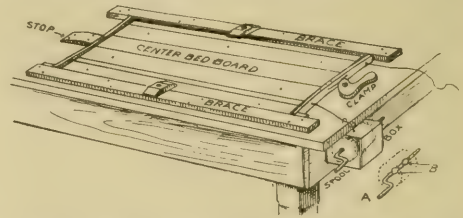
I made some of these needles last season, and gave them to my neighbor bee-keepers. They reported that they were such a boon to them that they could not get along without one, and I know I shall never wire as many as fifty frames without one, even if I have to stop and make it.

Some credit is due my partner, H. L. Parks, for perfecting this needle. I at first made the slot right at the end of the needle; and after sticking the doubled-back end of the wire in his fingers a few times he suggested that I make the slot further up the needle so about a quarter-inch of wire could be turned

back without extending past the needle. The suggestion was a good one, and, so far as I can see, perfected the needle.

A FRAME-HOLDER FOR CONVENIENCE IN WIRING.

Next in order of contrivances I made a frame-holder for holding the brood-frames while wiring them. Any one may make one of these by a study of the illustration.



The small wooden eccentric, when it is turned toward the frame, will crowd the frame against the small block opposite, and the end-bars will be slightly sprung in. If I remember correctly, I read this plan of springing in the end-bars in *GLEANINGS*; at any rate, it is not original but worth repeating; for it leaves the wires tightened better than any other method.

Make the small wooden box just a little larger than necessary to hold a spool of wire. Put the spool in it and bore through the sides of the box with a small bit so the bit will pass through the hole in the spool and on out the other side of the box. Next get a small iron rod of a size to go loosely through the hole in the spool, and about 14 inches long. At two points, about 2 inches apart on the rod and about 2½ inches from the end, mash it with a hammer until it will not quite go into the spool. File the edges of the flattened places sharp. Put a spool of wire in the box, and force the flattened places through the hole in one side of the box, and far enough into the spool so the end of the rod will pass out the hole in the opposite side of the box. Bend the remainder of the rod to a right angle twice, making a small crank. Nail the box under the table so the wire will feed out just right to enter the hole at the top of the right-hand end-bar, and so the little crank will be handy to turn with the right hand. Drive a staple in the edge of the table for the wire to pass up through, and you are ready to wire frames.

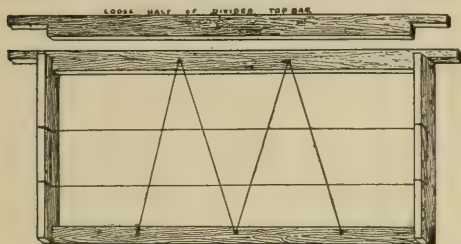
When the wire has been passed through all the holes and fastened to the nail, and the nail driven up, as is usually done, take hold of the little crank and begin to wind, helping the slack along with the left hand. When the wires seem well stretched, catch the wire just outside the frame, and, holding it tight, let go the crank; wrap the wire four times about the nail driven for that purpose; drive the nail up well, and again go through the same motion you did to wrap the wire around the nail. This twisting will break the wire off close under the nail head, and you will have a well-wired frame with no sharp ends to stick fingers in the future.

Mesilla Park, N. M.

HEADS OF GRAIN FROM DIFFERENT FIELDS

A FRAME WITH A TOP-BAR IN TWO PIECES.

For quite a number of years I have been using a frame of my own invention, which I think beats any thing on the market for ease of wiring, fastening



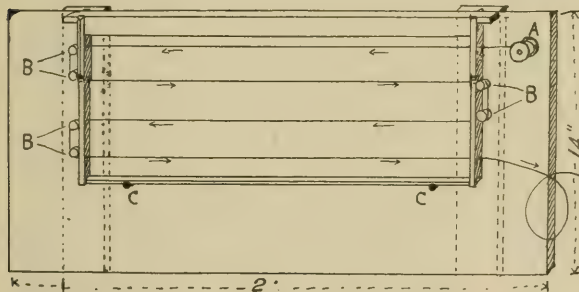
foundation, and especially for replacing damaged combs of foundation. The top-bar is in two pieces, the loose piece being nailed to the other after the foundation is put in place. I formerly nailed the end-bars also to this loose piece; but for replacing damaged combs, etc., I find it more convenient, and just as strong, if the end-bars are not nailed to the movable piece. The double wiring, as in the illustration, shows how easily and quickly either horizontal or vertical wiring may be done.

Pittsfield, N. Y.

GEO. A. HUMPERT.

PREVENTING THE WIRE FROM CUTTING INTO THE END-BARS.

Wire is somewhat springy; and as soon as a short length is removed from the spool it forms loops. The loops are liable to make kinks, and these break when the wire is drawn tight. When the end on the spool is released, the wire promptly unwinds enough so that



several dozen turns drop off the lower end of the spool because of this same springiness or elasticity. Once off the spool, the tangle begins.

Drawing the wire through the frames also has its difficulty, as the wire cuts into the wood of the end pieces where it turns the corner to go from one hole to another. A roller at the end of each span of wire just outside the end pieces, and tangent to a line drawn through the holes, was the apparent remedy; but while reflecting on how to make the rollers I remembered how easily the wire slides around a broom handle which I had used for straightening short bent pieces of wire, and found this a good substitute for rollers, when arranged on a board as shown in the attached plan.

The board is 2 feet long and 13 inches wide, underneath which are fastened two three-inch cleats which serve to stiffen the board and hold the pegs firmly. The pegs are of maple, and project $1\frac{1}{4}$ inches above the surface of the board. The two rows are 17 inches apart, and the pegs are shaved off on the inside so as to hold the frame more firmly. A three-inch nail is used for a spindle for the spool, and four one-inch finishing nails, driven in the lower flange of the spool, keep the wire from dropping off and catching on the spindle. A three-inch disk of tin, nailed on the lower

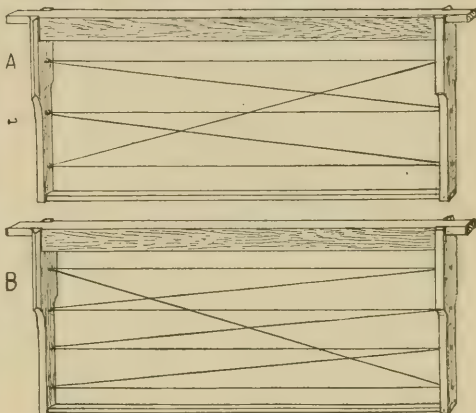
end of the spool, might serve the same purpose. After the wire is drawn through the frame and the end is made fast, the frame is lifted from the board, slipping the wires from the pegs, when the spans can be tightened and the wire made fast at the end next the spool and then cut off without waste.

Elyria, Ohio.

W. J. M.

NAILS BENT IN THE FORM OF HOOKS INSTEAD OF HOLES IN THE END-BARS.

Nearly every one runs the wire through the end-bars. This is surely a laborious manner in which to get the wire in the frame. I simply drive three slender nails through each bar, and with round-nosed pliers turn up the points on which to hook the wire. This makes five wires in the center, where the most sagging occurs. The wires must be drawn tight. If left slack, of course the foundation will sag. You will observe that the wires are too close together for the foundation to buckle. If not close enough, use four



nails instead of three. I hear some say that this is too slow—takes too much time and labor. I will venture this assertion: I can drive and bend the nails, run the wire on the hooks, fasten the foundation with melted wax and brush, twice as fast as I can by running the wire through three or four holes in each end-bar; the imbedding of the wires, only a trifle more. The wire from top to bottom hook is for a brace or stay to overcome the tendency of the other two or three diagonal wires drawing the frame out of square. With this the frame is held rigidly square by using a brace in the frame when drawing the wires. It takes but little more wire than the usual way. None is lost running up and down the end-bars. All is in use, and no foundation will sag or buckle if the wires are tight.

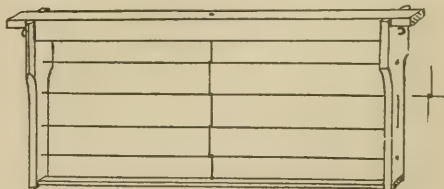
Corona, Cal.

H. M. JAMESON.

[See answer to C. Pennock on next page.—ED.]

HORIZONTAL WIRES SUPPORTED BY ONE VERTICAL WIRE.

My combs are perfect. There is no sagging of the foundation or bottom-bar, and no drone-cells. I punch



a hole in the center of the top and bottom bar; run a wire through; fasten wire with nail the same as horizontal wires are fastened; give one turn around each horizontal wire, then run it through the bottom-bar;

draw fairly tight (if too tight it is liable to cut the wires); then fasten. It does not bother when putting in the foundation.

Bellvue, Colorado.

CHAS. E. PENNOCK.

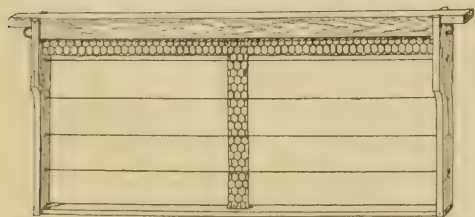
[Some years ago we tried various schemes of cross-wiring. We finally settled on what was known as the Keeney, which is a good deal the same as that shown and described by H. M. Jameson on the previous page. The difficulty with all intersecting wiring is the tendency of the foundation to bulge or buckle in the triangles formed between the wires. At the precise point where the wires intersect, there will be no sagging; but as the foundation is drawn out, the portion above the intersection has a tendency to bulge, and the result is a slightly uneven comb surface.

The best scheme of wiring is a series of vertical wires without intersections; but with ordinarily thick top-bars this does not seem to be feasible, especially with those who use the wedge-and-groove plan. We finally adopted the four horizontal wires—the wires being threaded through the end-bars. This form of wiring only partially overcomes the sagging of the foundation while it is being drawn out into comb. The portion one inch down from the top-bar (if light-brood foundation is used) is liable to have elongated cells. These will be filled with honey, while the portion below will be filled with brood that will have normal-sized cells.

Dr. C. C. Miller, to overcome this, put in vertical splits. Under some conditions, and with some bee-keepers, the plan leaves nothing to be desired. Under other conditions it does not quite fill the bill.

We have had in mind for some time back a scheme for incorporating wires in foundation after it is run through the rolls, the wires being inserted on a vertical line. This plan will still necessitate wiring the frames as now, as no scheme of putting wire in the foundation at the factory will answer unless those same wires can be secured to the top and bottom bars of the frames; and no Yankee or other genius thus far knows how to do this without making the cost too great. When running extracting-yards it is very important to have the wires secured permanently to the frame. A scheme of wiring that merely prevents stretching or sagging of the foundation is a long way from being satisfactory. Years ago we tried running wires in along with the sheet of wax as it went through the foundation-mill. Mr. E. B. Weed worked on this problem for some time, but gave it up in disgust. While it may work with flat-bottomed foundation, no feasible plan has yet been presented to make it work on *natural-base* foundation. But if there is any demand for vertical wires in ordinary brood foundation the article can be supplied. In this case the wires would be incorporated by means of electricity after the foundation has been run through the rolls.—ED.]

I ran short of foundation when I needed it most, so I economized by putting a vertical strip one inch wide in the middle of each frame, and also used the one-



inch starter at the top. My frames were already wired, so I imbedded the wire where the vertical strip of foundation crossed it as shown in the diagram.

The bees built straight firm comb in the frames so treated, and I was unable to tell those frames from those in which I had used full sheets at extracting time.

Of course, I do not claim there would be any thing saved by this plan in the long run, for no doubt I might have had more honey by using full sheets.

Colegrove, Pa.

R. A. WILLSON.

[This plan is perfectly feasible under some conditions and some seasons of the year; but in many cases one would get a large amount of drone comb.—ED.]

BRIEF REPORT OF THE MICHIGAN STATE CONVENTION.

After the secretary made his report a discussion was opened on membership fees, whether it was policy to

remain in affiliation with the National, etc. It was pointed out that the extra 50 cts. which was paid to the National could be used to good advantage in pushing the work of increasing the membership of the Michigan Association, and also in better advertising the booklet which has been a direct means of selling the members' honey. On the other hand, it was advanced that we should stay by the National in order to get the benefit of its protection in legal matters, and also on general principles. It was finally decided to remain as before; but an extra assessment of 50 cts. per member was levied for the Michigan, which virtually placed the membership in the Michigan at \$1.00 a year with an extra 50 cts. to go to the National. This gives the members membership in both. Another important action was in having the membership in the Michigan expire Jan. 1 each year.

The question of wiring frames to prevent sagging came up as a result of a paper prepared by General Manager N. E. France, of the National. Some lively discussion followed. The result was that the Association agreed that, no matter how one wires, there will be sagging as long as the foundation is made as now, with the cells running parallel with the top-bar. The following resolution was passed: "Be it resolved by the Michigan bee-keepers in convention assembled, that the manufacturers of comb foundation be asked to consider the question of making brood foundation so it will hang just opposite the way it is now made, the object being to prevent sagging."

The marketing of honey by coöperative methods came up for some lively and interesting discussions. During the past six years the association has been publishing a booklet giving the names of its members, and statistics regarding the amount of honey produced, and this has been a great help in finding markets. This year it was advertised in three bee-journals, and as a result it was sent all over the United States. One bee-keeper who produces at least 10,000 lbs. of honey annually, stated that he could sell ten times as much as he can produce, and gives the credit to the booklet. This year there will be 1500 published, and they will be even more widely distributed than before. This will probably be the extent of the coöperative efforts in selling this year, excepting information which will be given the members by the executive board regarding supply and condition of markets. Another year, however, may see an advance along this line.

The program as formerly published in the bee-journals was carried out, the papers of those not present being read by the secretary. Visitors from outside the State were Geo. W. York, of the *American Bee Journal*, and L. W. Boyden, of the *A. I. Root Co.* Mr. York read a paper entitled "Honey, its Marketing and Staple Use." Mr. Boyden contributed some valuable suggestions on the advertising of honey, among them being demonstrations at pure-food shows.

The former officers were reelected, remaining as follows: President, L. A. Aspinwall, Jackson; Vice-President, E. D. Townsend, Remus; Secretary-Treasurer, E. B. Tyrrell, 230 Woodland Ave., Detroit.

The next convention will be held in Grand Rapids.

Prizes were awarded as follows on the exhibits made: Best 10 lbs. of comb honey, first, C. S. Foote, of Ridgeway; second, L. C. Wheeler, Barryton. Best 10 lbs. of extracted, first, A. D. D. Wood, Lansing; second, L. C. Wheeler: 3 lbs. of extracted containing least water, first, L. C. Wheeler; second, A. D. D. Wood. Best 10 lbs. beeswax, first, A. D. D. Wood; second, J. H. Peters, Detroit; third, L. C. Wheeler.

Hon. Geo. E. Hilton will represent the association at the State Legislature in reference to any foul-brood legislation, and the executive board will appoint a representative to meet with the National at its next meeting.

Detroit, Mich.

E. B. TYRRELL, Sec.

HOW TO REQUEEN IN EARLY SPRING.

What would you advise a beginner to do when he finds one of his colonies queenless in early spring?

Omega, Okla., March 14.

N. D. DICKEY.

[In almost every case you will find that there will be one or more other weak colonies in the yard having a queen. If any colony, strong or weak, is queenless, unite it with one of these colonies having a queen. If it is a little early in the spring we would advise putting two colonies together, placing them in the cellar and keeping them there for about a week, and then set them out permanently on their summer stand. But we would place such colony on the stand occupied by the stronger of the two, because some bees will return to their old stand. These can be collected in an empty hive having a dry comb, and placed where they belong.—ED.]

A REPORT FROM ONE WHO USES AN AUTOMOBILE IN OUT-APIARY WORK.

I was pleased to read and note what you have said in GLEANINGS on automobiles. I have been impressed with the idea that the automobile is what the outyard man wants, so that I could not rest until I succeeded in finding one that I could buy, about the beginning of September last, and which has fully demonstrated the advantages looked for. When I have taken a team to a yard 20 miles away it has taken all day; but when I took the Runabout I had eight hours to work, "or more if wanted." I took my exhibit to and from our county fair, including a new demonstration cage.

We simply run the machine under a large apple-tree, jump off, and go to work. Well, I thought that *that* machine ought to be credited with my extra three or four hours' time that morning, and also with half the expense of a team. I value it at \$200. I have carried five hives of bees as well as other things, and I consider there is nothing their equal for carrying bees. Ease and quickness are what are required for that. I think I can do about double the amount of peddling honey in a given time with it over the old way.

My machine is only seven-horse power. I want one about sixteen-horse power, and more room for carrying supplies or bees.

I shall look forward with much interest to what you will have to say about them from time to time. Perhaps you could get up such a machine. I should think you could sell any number of them, as they would be just what the farmer as well as the bee-keeper needs, for it looks to me as if it would practically bring the farmer 40 per cent nearer market.

Manistee, Mich., Feb. 20. WALTER HARMER.

SWEET CLOVER COMING TO BE RECOGNIZED BY THE AGRICULTURAL PAPERS.

I am making considerable headway with sweet clover in my State. One year ago no farm journal would tolerate the idea of advocating the sowing of *Melilotus alba*; but now, if you read *Wallace's Farmer* you will notice that they advise farmers to sow it under certain conditions, saying it should be taken on trial by all farmers. It begins to look now as though *M. alba* were to play a prominent part on every farm in the United States, both where alfalfa is grown and where red and alsike are depended on.

Much good has come from Henry A. Wallace's visit to my field last fall, and that is why he recommends its use as a pasture-plant, and the coming summer I hope to demonstrate its value as a superior hay crop, just as I have done as a superior pasture legume.

THE YELLOW VARIETY PROMISES WELL.

I am harboring a strong hope that the yellow variety may prove to be of great value to sow in the corn at the last plowing, and then to be pastured the following season or be plowed under the last half of May. If this proves to be good it will mean more to the corn-belt farmer than any thing of the kind that was ever brought to light. That is why I want this yellow seed. Yellow sweet clover grows two feet high here by the 16th of May, and could be turned under; and what a fertilizer it would make, and all in time to plant to corn! or if sown with timothy it would make a splendid pasture; or knock down the stalks, and with a binder cut it for seed. It is a proven fact that sweet clover is the best to feed to stock, and that it contains more of the essentials than any other clover. Doesn't the future look bright for sweet clover?

Maquoketa, Ia., Feb. 7. FRANK COVERDALE.

IS IT TRUE THAT WINTERING AND BREEDING UP IN THE SPRING ARE WEAK POINTS IN SECTIONAL HIVES?

I am glad I read Bro. Holtermann's report of the Chicago Northwestern convention, p. 45. Here I've been keeping bees in sectional hives right by the side of other kinds of hives for a quarter of a century, and do not know yet that wintering and breeding up in the spring are weak points in these hives.

Regarding the decision by voters of the convention as to what constitutes an eight-frame or a twelve-frame hive, I feel sure that, upon a more mature deliberation, the decision would be reversed by the same jury, for no one can deny that when a super is temporarily used as a brood-chamber over an eight-frame hive it becomes for the time being a sectional hive of 12-Langstroth-frame capacity with all the advantages of a sectional hive, which advantages should be apparent to every thinking bee-keeper.

Where is the economy in having a fixed twelve-frame brood-chamber for the bees to shiver in all win-

ter and spring when they would be so snug and comfortable in an eight-frame body? Why not make them of twelve-frame capacity when that capacity is needed (during the breeding season), by adding a super? Birmingham, O. J. E. HAND.

NUMBER OF COLONIES NEEDED TO SECURE CROSS-POLLINATION OF FRUIT.

We should like to know if you have any data giving the number of stands of bees necessary to insure pollination of fruit-trees in orchards. We should like this estimate based on acreage. We know this is a subject that is very hard to arrive at any definite conclusion on; but we should be interested in having any report you could make us.

PORTLAND SEED COMPANY.

Portland, Oregon, March 9.

[There is no absolutely accurate data giving the number of stands of bees necessary to insure pollination of fruit-trees in orchards. Progressive fruit-growers, however, are asking to have bee-keepers put in their orchards somewhere about ten or a dozen colonies each. If the orchards are very large, such as are in California, Colorado, or possibly in Oregon, a much larger number would be required. We would rather err on the side of having too many than too few bees. No trouble has been experienced where there are as many as 100 colonies to one small orchard, that is to say, that number does not seem to overdo it. Whether a dozen colonies in the same orchard would do the work just as well, we can not say.—ED.]

SWARMING OUT AFTER SHAKING ON FOUNDATION.

On page 81, Feb. 1, Mr. Percy Orton says, "Don't shake bees on to foundation alone, as over half will swarm out." I shook fifteen colonies on to foundation and but one swarmed out, that one having less than a quart of bees. I could hardly blame them. This is not "ancient history" but modern, having occurred last season. I shook them in the evening after dark, giving them all night to think it over. Perhaps that makes a difference; who knows? Canon City, Col., Feb. 9.

W. G. WRIGHT.

[If bees are shaken off on to foundation during the middle of the day, say from 10 to 2 o'clock, there is some danger, especially during the swarming season, that they will swarm out. If they are shaken out at or toward night, they will cool off by morning, and probably by that time be ready to start housekeeping anew.

Years ago, when we shook on to foundation to cure foul brood in our yard, we always shook toward night, or just as it was getting dark. We treated in this way in all something like 80 colonies. There was not one of them that swarmed out, so far as we now remember; and the bees went to work the next morning building the foundation into comb.—ED.]

DO FIELD PEAS YIELD HONEY?

I write to know if bees gather honey from the common varieties of field peas. Last spring was very unfavorable. It rained three to four times a week, and the bees did not gather any honey; but in August we had several fields of peas in bloom, and the bees worked on them all day. Whether they were gathering pollen or honey I don't know. Calhoun, Ga.

BOYLE DILLARD.

[Our impression is that common field peas do under some conditions yield honey. They belong to the same general family as the locusts; and there is no reason, when conditions are right, why they should not yield some nectar. If any one has any evidence to offer we shall be pleased to hear from him.—ED.]

A HONEY-BANQUET.

A year ago at the State fair we organized the Shawnee Co. Bee-keepers' Association, and now we have 30 members. This winter we met with the Kansas State Bee-keepers' Association, and we had a good time. I think if every county could have a county association for home encouragement, and then send a delegate to the State association it would encourage the industry and be a great help to all bee-keepers. Of course, here in Kansas the bee industry is new; but it is fast coming to the front, and Kansas is bound to be a grand bee State, as there is much alfalfa raised here. At the close of the meeting we had a honey-banquet. Everything was made with honey, and honey in all forms was on the table. We had an observation hive with bees in it for a center piece, and everybody went home well pleased and happy.

Topeka, Kan.

J. P. LUCAS.

SPRING FEEDING BY PLACING COMBS OF HONEY IN THE HIVE.

After studying what has been written about spring feeding I should like to try a plan recommended by Mr. Gray, of England, in *GLEANINGS* for 1908, p. 1200. He advises placing a frame of honey in the center of the brood-nest about the first of May, and then, fourteen days later, giving them two other frames; and after other fourteen days, two more. I should like to hear from any one in this country who has tried Mr. Gray's plan and can tell how it works.

TWO COLONIES IN ONE HIVE.

I have a few colonies of bees in the cellar that are weak. When they fly in the spring I intend to put two colonies into one hive with a division-board between them. The division can be made of veneer tacked to top and bottom cleats. This arrangement will conserve the warmth.

Ridgewood, N. J.

WM. LEITCH.

[England has a much milder climate than most sections in the Northern States. Putting a comb of honey in the center of the brood-nest by May 1 might be too much of a good thing. In many localities it would be far better to put the comb of honey at the side of the brood-nest by May 1. Later on it might do to put it in the center. Before a brood-nest is tampered with very much there should be settled warm weather.—ED.]

SKUNKS KNOCKING ON THE HIVES.

I have been experiencing considerable difficulty in keeping the triangular entrance-blocks in place. I had the same trouble during previous winters, but worse this one. I could not believe they had been worked away by the wind so frequently, for on many occasions I had found them displaced when I knew it had been comparatively quiet. I became suspicious that chickens, rats, or some other animal was responsible, and was on the point of setting a trap. Last night, about nine o'clock, my wife discovered something knocking at one of the hives. This hive rests on pieces of brick about two inches from the ground. It was covered with a light box for shade. Stealing quietly to the hive I listened for some time to the drumming, which was as regular as any bee-keeper ever produced. I finally discovered that the drumming was beneath the hive. By stooping I could discern the animal by the bright moonlight, and every little while it would poke out its head. A lantern and a rifle were brought, and with the added light of the lantern the drumming still continued. The animal would pause and stick out its head, and I took advantage of this exposure and gave it a ball. I do not know how it could have produced this drumming unless with its head. The bees did not seem much disturbed. They had probably been drummed in this manner so frequently that they were used to it. I suppose the purpose was to cause the bees to fill themselves with honey and then attract them to the entrance by scratching, where they could be caught.

Geary, Okla., Jan. 28.

N. F. GARDINER.

[Skunks may have learned the trick of bumping on hives to draw the bees out at the entrance. Say! you didn't tell what happened after you shot the skunk. We have been informed that, unless the shot instantly kills or paralyzes, the animal will scent up the neighborhood. We infer that you made a good shot.—ED.]

HULLED SWEET-CLOVER SEED SETS AS QUICKLY AS ALFALFA, ALSIKE, ETC.; THE HULLED REQUIRES SIX MONTHS.

The articles in *GLEANINGS* on the subject of sweet clover are very interesting. I bought a few pounds of The A. I. Root Co. in the fall of 1909. The yellow was hulled, the white was unhulled. I sowed both varieties in September. The yellow hulled seed came up in ten days, but the white showed no life. On page 828, June 15, 1907, J. A. Green says the white hulled seed came up very promptly, while the yellow unhulled came up best the following spring. I think our combined experience shows that hulled sweet clover seed of either variety will germinate just as quickly as alfalfa, alsike, or any of the clover family, while the unhulled seed requires six months, or time to rot the hull before it comes up, thereby removing the ban that has been following sweet clover—that is, that it invariably takes six months to germinate.

As clover honey granulates quite readily the apiarist is fortunate if he lives where galleberry (holly), mountain sage, or snowdrop grows. The snowdrop grows on the open hills or in dense forest growth in my lo-

cality. It is a fine-growing shrub, never over four feet high, with a small pink bell-shaped flower that produces an abundance of water-white honey in June. The seed is produced in white berries that hang on all winter. I have a bottle of this honey mixed with clover three years old that has frozen repeatedly, and has just commenced to granulate.

Fraser, Idaho, Feb. 16.

F. F. GEORGE.

A LEGAL CONTROL OF BEE TERRITORY WOULD BE UNCONSTITUTIONAL.

Referring to the article on page 41, Jan. 15, about the control of bee territory, I can not see why a bee-keeper should claim exclusive right to any territory any more than a person engaged in any other business. Has a physician or a lawyer an exclusive right to any territory, to the exclusion of others in the same profession who may choose to enter that locality to try to make a living? Even though the meat or grocery business of a certain place is overdone, who shall claim that no one else has any right to start in the same business there? Because a certain dairy can supply all the milk demanded by a certain community, does that fact forbid any one else starting a dairy if he so desires? If the bee-keepers of Imperial Valley have formed a "trust" to keep out all intruders, how are they any better than the Standard Oil Co.? Do not their methods savor somewhat of those of the Western Federation of Miners? So far as legislation to give any bee-keeper control of certain territory is concerned, I think it would be unconstitutional from the very bottom, and contrary to the rights of every free citizen. I regard bee-keeping as similar to any other business. The man who starts it does so to make it pay, ordinarily, and I can not see why laws should be passed to protect him especially against any one else who might wish to engage in that business in the same locality, any more than that laws should be passed to give a blacksmith control of all the territory within a given number of miles from his shop, to the exclusion of all other prospective blacksmiths. Dr. Miller says there is no conflict about a cow-pasture, and asks why there should be about a bee-pasture. I grant the first part. As a rule the owner of the cows owns the pasture also; but suppose those cows had wings and could fly all over the country, feeding where they like. I fear that then there would soon be trouble. In the same way, if the owner of an apiary owned all the land within the limits of the bees' flight there would be no cause for trouble; but such a condition is almost unheard of, and the bees must pilfer from many land-holders.

I do not in any way favor the Australian system unless the payment is made to the owners of the bee-pasture. What right, moral or otherwise, has a State or county to collect revenue by granting to one person the privilege of allowing his bees to steal nectar from the flowers belonging to others, and forbidding such owners to keep bees to gather the nectar from their own fields and orchards?

A man may plant a great fruit-orchard or tract of alfalfa, and establish a few hives of bees for insuring fertilization. Along comes Mr. Special Privilege, bee-keeper, and says, "Here! you must not keep bees, for I have bought the right for this locality."

"But," says the orchardist, "it is my land, my orchard, and therefore I consider it my honey if my bees gather it."

"No," says the other, "you must give the honey to my bees, for I have bought the privilege, and you would be interfering with my business."

What sort of justice is that, to compel a man to give the nectar from his orchards and other flowers to some "protected" bee-keeper? Dr. Miller's comparison of stock-raising and bee-keeping will scarcely stand; for not much stock is allowed to range wholly free as are bees, but in most cases it is kept within certain definite limits.

Fort Casey, Wash., Feb. 17.

ERLE SARGENT.

QUESTIONS ON BEE DISEASES.

I have received lesson 13. Please send me lesson 14, and at the same time answer the following questions:

1. By "spring dwindling" do you mean the act of bees flying out too early and chilling, never to return again, or dying from old age without leaving the hive?

2. What is sorghum syrup?

3. By curing paralysis does O. O. Poppleton sprinkle the sulphur on the bees and combs dry, or does he mix it with water?

4. Where can I find any information in regard to queen cramps?

5. Under "bee paralysis" you say, "Destroy the queen of an affected colony." Now, does the germ of paralysis affect the blood or vital bacteria of the brood or not? If not, why destroy the queen? By what germ is the paralytic contagion spread (in what manner)? If the queen is destroyed, would you advise requeening from a new strain?

6. Please give a little more detail in general, and state the symptoms of chilled brood, overheated brood, poisoned brood, starved brood. In any of these three cases, will the bees remove the carcass of the larva or does this have to be done by the apiarist? In how many of the above cases does the brood die?

7. Does spraying poison ever kill adult bees?

8. Will the dead mass of American rofy foul brood invariably rope?

9. Will the color sometimes vary outside of the coffee-brown tints described?

10. Do the cells containing dead larvæ invariably sink as soon as life departs from the grub, or how long after? Does the capping fall first and then the grub die?

11. About how long after the disease affects the first portion of comb does the odor make itself noticed?

12. Is the ropy test a base symptom, or, so to speak, a *dead-sure sign* of American foul brood, or does this symptom have to go hand in hand with the others in order to prove the case?

13. How can you manage bees at night? I tried it once, and they stuck to every thing and could not be made to go in at the entrance after the hive was closed, clustering in front all night. Could not a tent be placed over the hive at night, and the manipulation carried through next morning?

14. By the McEvoy method are the bees left to go and come after they have been brushed for the first time on a starter? If so, why would not the robbers take the disease-tainted honey just stored from the sacks of the brushed colony and thus spread the contagion?

15. Page 138 of the last edition of the ABC and XYZ of Bee Culture, what can you use honey for that has been extracted from foul-brood combs?

16. Page 138, why do you say, "As soon as brood hatches out of healthy combs extract the honey and melt combs" if the brood hatches? If the brood hatches out healthy, why melt the combs?

17. Page 138, has this ever been proven by experience? How can a colony be cured when the bees have intercourse with the diseased colony and the honey therein?

18. Page 140, is all the brood in the hives taken away and bees shaken on foundation after being dequeened, or do you mean, in other words, no egg-laying is allowed? Are the queens destroyed or put back again after the lapse of time?

Whitstone, L. I.

ADOLPH LOEHR.

[1. "Spring dwindling" is the term used to describe a number of evils. It may be caused by the bees flying out too early, as you say; by dysentery; by too great a mortality, due to too large a number of old bees in the hive in the spring, etc.

2. Sorghum syrup is a syrup which is glucose in its nature, made from the sorghum, otherwise known as Chinese cane.

3. Mr. Poppleton sprinkles on the dry sulphur instead of mixing it with water and pouring it on.

4. It is not often that a queen has the cramps; but sometimes, if one is picked up that is in the height of laying, and heavy with eggs, and is handled somewhat carelessly, as by an amateur when clipping, for instance, she may turn over, stretch out, and appear to be dead. After a few minutes, however, she usually begins to move a little, and finally is able to walk again.

5. Unfortunately, far too little is known in regard to the disease known as paralysis. This disease is not well named, however, for there are no symptoms like paralysis in the human family. A number of the bees will exhibit a peculiar shaking or tremulous motion as they stagger from the hives. It seems to be a disease of the mature bees rather than of the brood, and it is well known that certain strains of bees are less likely to be diseased in this way than others, and that is why it is a good plan to requeen whenever a colony shows these symptoms. It is not known just what is the way in which the disease spreads—that is, whether it is of germ origin.

6. The symptoms of chilled, overheated, poisoned, or starved broods are almost identical, and even experts are often puzzled by simply examining the brood alone. If the history of the colony can be taken into consideration it is generally possible to decide which is to blame—whether chilling, overheating, poisoning, etc. In the spring, if the combs contain no honey and

there is dead brood, it is quite reasonable to suppose that the brood starved, although, of course, if very cold weather occurs during the early spring, and the bees have more brood than they can cover, it is likely that the trouble was due to chilling. Overheating is not very common, but does sometimes occur during the very hottest weather when there is no ventilation through a proper-sized entrance, and when the sun shines directly on the hive. Poisoned brood would not be likely to be found in one colony and not in others unless it were known that this one colony worked on blossoms that had been sprayed, while others did not. With the advice that is going out now from all the experiment stations, practically, there is less and less blossom-spraying being done; consequently, there are fewer reports every year of poisoned brood.

A strong colony will almost always remove larvæ that have died from any cause except those that have died from American foul brood, and, of course, this is such a sticky mass that they find it impossible unless the colony is very strong with a large force of young Italian bees. Brood is likely to die from any of the above causes.

7. The spraying-liquids of poisonous nature often kill adult bees. Cases are on record where almost whole apiaries have been destroyed. For instance, Metcalfe & Parks, of Mesilla Park, New Mexico, have lost very heavily in this way.

8. The roping is the characteristic symptom of American foul brood, and we do not believe that there are any cases of this disease where the dead larvæ do not rope at all—at least we never heard of such.

9. The color of the dead brood is not a distinctive symptom, for dead brood of any kind is likely to turn various shades of yellow, brown, black, etc. There is really not very much difference in the color of dead brood, no matter what may be the cause of the trouble. In the case of a ropy type of foul brood the color turns darker as the disease progresses.

10. The cappings sink after the larvæ die. The cappings of larvæ that have just died are perfectly normal in appearance.

11. The odor from American foul brood varies according to the case. In some instances it is hardly perceptible, while in others it is so strong as to be noticeable when one enters the apiary. It usually depends upon the length of time the disease has been running; but we think it may be quite noticeable in some cases where the disease has just started; while, in other cases, where it is more advanced it might not be as strong.

12. It may be pretty safely stated that if the ropiness of the dead brood is very pronounced the disease is almost sure to be American foul brood. However, there is likely to be a slight roping with the European foul brood, although usually not nearly to as great an extent.

13. Handling bees at night is not difficult if the light be placed a little above and back of the hive—that is, the side opposite from the one in front of the operator. There would be no advantage in using the tent the next morning.

14. There is not likely to be much honey stored that is diseased; for the amount in the honey-sacs of the bees, that might be diseased, is used in comb-building; therefore the bees may be allowed to come and go. Robbers would not be likely to rob from brushed or shaken bees. We have never known them to do so.

15. Honey that has been extracted from foul-broody combs may be used on the table. It is not injurious to man. Probably the majority who have honey from foul-broody combs boil it thoroughly and then use it for feeding back. There are some, like Mr. France, who feel that boiled honey is dangerous. Disease has sometimes returned when boiled foul-broody honey was given back to bees.

16. There may be some disease in the combs described, even though much of the brood would be healthy; and since it is impossible to clean up a comb diseased with American foul brood, there is nothing to do but melt it up. It is better to err on the safe side.

17. In this case the bees should be brushed again on foundation, after the brood above has hatched and the upper diseased combs removed. You will notice that the directions given here are to treat as before described; that is, go through with the process again of shaking on to new foundation.

18. The brood does not need to be removed in the Alexander treatment, for that which is in the hive already is allowed to develop. You will probably prefer to read the Alexander treatment as it was originally given by Mr. Alexander, and so we refer you to Nov. 1st GLEANINGS, 1905. The queens in this case are usually destroyed; at least, different queens should be introduced and the best Italian stock used.—Ed.]

OUR HOMES

By A. I. Root

In all thy ways acknowledge him, and he shall direct thy paths.—PROV. 3:6.

It is now the 15th of March, and I have made my last hatch with my two incubators before going to my northern home. A good many inquiries are coming in in regard to that "simplicity" incubator pictured and described in our issue for Dec. 1. By the way, perhaps I should mention that I have not only taxed my brains but I have done more praying (that the Lord would "direct my paths") in regard to this incubator, than any other thing for some time. While all along I have had glimpses of success, I have reason to fear it was unwise to describe it as I did while it was yet unproven. I did it a good deal as I have done all my life, to set other minds at work on the problems that are confronting me; and, judging from the correspondence, I have succeeded pretty well.

I have already mentioned getting one hatch, from a machine full of eggs, of about 70 per cent; but when a neighbor, Mr. G. M. Raub, a York State bee-keeper who has recently passed his 80th birthday, on his first trial with a new incubator secured over *eighty per cent* (and has every chicken alive now), I began to think I and my incubator are a "back number." I think friend Raub got the chicken fever by coming down to visit me. As he had no previous knowledge with incubators I advised a sitting hen; but hens were too slow, and he made a trip to Tampa and came home with a "Mandy Lee" machine (the one I advised him to get*) almost before I knew it. I called to advise him; but the new moisture hygrometer, and, as it seemed to me, the complicated directions, were such that I feared he would never do any thing with it. He sold 12 of the chicks to a neighbor of his, and gave the rest (close on to 70) to a single sitting hen, just as I have been advising, and I think every chick is "alive and well." Full of enthusiasm he filled the machine again (I think before it cooled off), and did almost as well, and now he is running the *third* hatch. I have the credit of furnishing him the eggs, or at least the greater part of them.

There is a big moral right here, friends, for old people like Mr. Raub and myself. Is there any thing nicer and more fitting for elderly people who want to be busy about something than caring for chickens? Such a one can, with a clear conscience, ask God to "direct his paths" in devising and planning for this innocent and harmless rural industry. Friend Raub lost his good wife but a short time ago; and so he is alone in his neat little cottage, surrounded by a very pretty Florida garden. He has his bright new incubator close by his bedside, and I

can easily imagine it is a sort of company for him while he enjoys studying it and giving it the careful attention it requires.

Well, we have another neighbor, Mr. Daniel Abbott, who, with an old Prairie State incubator that had remained unused for several years, took 187 chicks from 214 eggs. I furnished the greater part of the eggs for this remarkable hatch also. Well, after I heard of this and saw the fine healthy chickens, I tackled my Cyphers incubator, and, by closely following *all* the directions, I secured almost an 80 per cent hatch, and every chick is now alive—yes, very *much* alive—as I see them out of the window from where I write; and this brings me to the point of my story to-day.

Five days after starting the seventy-egg Cyphers I gave the old Simplicity 60 eggs for one more trial. In order to make out the 60 of fresh-laid eggs I took three eggs from a hen that had been sitting on them just about 24 hours, and I put a pencil-mark ring around each one of the three eggs. By means of a new thermometer called the "Inovo," that I got of the Prairie State people, I kept the temperature of the eggs *themselves* much more accurate than ever before, and in just 19 days two bright strong chicks hopped out of two of the pencil-marked eggs so quickly I didn't even know they were pipped; and you will recall that the eggs are moved from every shelf to the lower one every eight hours. This shifting three times a day is all the "cooling" and turning the eggs get; and examination on the 18th day with my egg-tester showed nearly sixty eggs with a live active chick in every egg. I noticed then these two eggs were plainly in advance of the others. Well, heretofore I have practiced shifting the eggs from shelf to shelf until all were hatched; but as Cyphers and others plainly declare the eggs are not to be touched or moved at all after the 18th day, I decided *this* time to stop moving, even if each egg is warmed only from one side by "contact heat," as has been already explained. At this time there were eggs on four shelves (see p. 740, Dec. 1), 14 on each of the three lower ones, and 11 on the upper shelf. Now, this upper shelf is not as warm as the three lower ones, and it is the one I always use to place the chicks just out of the shell, so it was desirable to get these *eleven* eggs out of the way; and, therefore, I warmed up the Cyphers machine again just to take those eleven eggs. Now mark carefully. One reason for the eight-hour shifting is *because* this top shelf is colder, and the eleven eggs that happened to be on it that particular morning were exactly like (and, in fact, a part of) the whole 57 fertile eggs. Well, *on the 21st day all of the eleven but one had produced a fine chicken, and that one was partly hatched.* If every egg from that upper shelf had produced a good chick why should not all of the other shelves? I was almost ready to shout to the boys back in old Medina that my incubator had given a 100-per-cent hatch; but Mrs. Root held up her finger and said, "Counting chickens!"

*At that time this was the only incubator I knew of for sale in Tampa; but since then the Cyphers people have also opened a house there. See advertisements of both, also Prairie State, in this issue.

This is a bad place to stop, I know; but I think I must digress a little right here. Cyphers and other incubator manufacturers are very emphatic in saying you must not open the incubator to help chicks out of the shell, etc. They say, "On the 18th day shut up all ventilators *tight*, and don't open the door until the hatch is over." Over against this advice the folks on the "baby-chick farms" open the machines any time to get chicks that are dry enough to fill orders, etc.; and Philo's "trick of the trade" is by *helping* chicks to break the shell, etc. Who is right?

This is what I did: I reasoned that, if Cyphers' machine was so much better after the 18th day, I would open the door and put *another* shefful in. I reasoned it could not hurt those already out and mostly dry, and the one almost out could stand it, and so I made the transfer. At this time, besides the two chicks on the 19th day, only about half a dozen were hatched in my incubator, and almost *at once*, so it seemed, every chick in both incubators "died in the shell."^{*} The one that was part way out stopped work when that door was opened; and, although the temperature was kept right up, and the door was open only a second or two, he never made any more progress until I removed the shell after the hatch was all over.^{*} Some of you may think all this a trivial matter, but in it I see two glimpses of God's wonderful laws and traces of his handiwork. First, what did that sitting hen *do* to those eggs during the 24 hours she had them that gave them the "send off" so they went through my clumsy machine and gave those two bright chicks so promptly?

The editor of one of the poultry-journals said it was of great importance that the temperature be pretty exact for the first week, but that it didn't matter so much about variations during the latter part. In connection with this it may be well to mention *again*, that, after a hen has been on eggs for about a week, they may be out of the nest as long as *three days and two nights*, at a temperature of 50 degrees or lower, and *still* give a good hatch of healthy chicks. Over and over again I find people throwing eggs away because the hen deserted them and they "got cold."

Well, my experiment, or, if you choose, *experience*, calls out two questions: First, if my 57 eggs had all been under a hen 24 hours (like the two) would I have had a good hatch?

Second, if I had shifted the whole 57 (instead of just the 11 on the top shelf) into the Cyphers machine, where there was plenty of room for all, would all or nearly all have hatched as did the 11? Even if I have not as yet had a really successful hatch with the "simplicity," have I not come pretty near

it? I am now satisfied a thermostat to control the temperature would be a decided advantage, for, in fact, just before I removed the 11 the heat went up one night so I feared all were injured; but as *these* hatched so finely I was forced to conclude none of them were harmed.

There is another beautiful text in line with the one at the head of my talk to-day. "But the path of the just is as the shining light that shineth more and more unto the perfect day."—Prov. 4: 18. Now, suppose we change the word "just" to the words "honest, unselfish investigator" (and I think we have a right to do this), and see what a grand incentive we have to push on. My "pathway," both in bees and poultry, has been blessed all along by additional "light," pointing continually to the more "perfect day" ahead; and I will close by giving one more of my recent "discoveries." You will recall how many have decided that the fireless brooder needs a little heat for the first few days unless the weather is very warm. Well, after reading on page 166 how friend Clough kept full-grown hens in his lampless brooder to get eggs in winter it occurred to me a *sitting hen* could be put into this brooder for a week or ten days, and she would be cheaper and better than any lamp. Well, when I recently took 55 chicks from my Cyphers machine, I had a hen with eight half-blood Buttercups only a few days old. I raised the upper part of the brooder up to the highest notch, and, toward night, induced the hen to go in with her chicks with very little coaxing, and *then* induced the 55, just as they came out of the incubator, to run into the brooder about as you would run a swarm of bees into a hive. I made a little dooryard of netting around the brooder for the first few days, but now she goes everywhere with her "swarm" of chicks, and hasn't lost one. As they are close to the highway they are a delight to the eyes of passersby, old and young. Say, now—what's the matter with my "lampless brooder"?

HOW TO MAKE AN EGG-TESTER; AN EXPLORING EXPEDITION INSIDE OF AN EGG-SHELL.

I have visited Yellowstone Park, Mammoth Cave, Niagara Falls, and have enjoyed them all; but I am not sure but that the tracery of God's handiwork in an egg-shell during incubation has not given as much keen enjoyment as any or all the others. The only conditions are a good egg-tester and a place to use it. The card below has suggested my topic.

Friend Root:—I notice in your poultry articles you speak of an egg-tester of your own invention. As I am a new subscriber, and there are probably others, could you not give a description of it in the next issue of your poultry article? You have my sincere sympathy in your loss of chicks by "varmints." I have had the same experience; but steel traps and good cats have banished them from the place. I hope you will have better success with the next lot.

Loda, Ill., Feb. 4.

WM. RIDEOUT.

^{*}As the whole incubator cellar was close to 80, I don't think you can say I *chilled* the eggs by opening up, etc.

^{*}After it seemed likely no more eggs were going to hatch, I placed them all on a looking-glass, as I have explained, and only two "wobbled" to indicate life. These two I helped out of the shell, but will hardly make a "live" of it.

The invention is not mine, but belongs to Mr. R. R. Root, of the Root Incubator Co., Cleveland, Ohio. Get a cheap pasteboard

box about 6x8x3½ inches. Mine is a box that contained "toasted cornflakes," by the Quaker Oats Co. Remove the top, and with a sharp penknife cut the sides so it will fit close around your face. Make the right curve where it strikes your forehead, and then the opposite side where it goes around your nose. The idea is to make a little "dark room" around both your eyes. All the testers I see figured in the catalogs are for one eye only; but I find it a very great advantage to be able to look with both eyes as you do with a stereoscope. Now cut a hole in the opposite end or what is usually called the bottom of the box, a little larger than a good-sized egg. Cover this with a piece of black cloth, soft leather, or, perhaps, better still, a thin piece of soft black rubber. Fasten this fabric over the hole with tacks or glue, but so you have it tight and close. Now cut a hole in the center of this rubber, about as large as a common spectacle-glass, and your machine is done. If made carefully, every streak or ray of light should be cut off around the egg when held against the opening, and also when the box comes up around the eyes. If you use spectacles you want strong magnifying power to see clearly 6 or 7 inches from the eye. Now with this you can quickly test fertility, even out of doors, and fairly well on a cloudy day; but to see what is going on inside the egg every day you want a darkened room, with a single ray of sunlight coming in about the size of an egg. Stay in the room, as I have before explained, until your eye is accustomed to the darkness; and then when this single ray falls on the egg opposite your eye you are able to see not only the machinery of unfolding chick life, but you can also see the antics of the chick before he escapes the ivory walls of his prison house. A day or two before exclusion these "antics" will cause the egg to move slightly when placed on a smooth cut-glass mirror. This is what I have termed "animated eggs."

NOT ONLY AN EGG-TESTER, BUT A SEX-TESTER.

I presume many of you have seen accounts in the papers of a machine that would tell sex, etc. I have passed it by heretofore as too ridiculous to be considered by any intelligent reader; but it seems the fellow has had the cheek to carry his "toy" to one of the poultry shows; but a reader of GLEANINGS was too much for him. Read the following:

At the recent poultry show at Madison Square Garden, New York city, among the novelties there was a "sure thing" egg-tester, the invention of W. Gunnerson, of No. 20 Garden St., New Rochelle, N. Y. The inventor claimed that his device would not only tell an unfertile egg from a fertile one, but would also determine the sex. The device was a small pendulum which was held over the egg to be tested. If it swung around in a circle it indicated a cockerel; if back and forth in a straight line, a pullet; and if it remained stationary, an unfertile egg. I devised a plan to test the machine; and, accompanied by Frank Rodgers, of *Farm and Poultry Magazine*, brought an egg for Mr. G. to test. The device was placed over the egg and commenced to whirl around in a circle. Mr. G. pronounced it a very fertile egg, and, if placed in an incubator for 21 days, it would hatch out a cockerel, and he would bet \$100 on it. I then took the egg, and, in

the presence of about fifty people, broke the shell and stated that it was a hard-boiled egg, and showed it to the spectators. Mr. G. said he did not care—there was life in it any way. The joke of the boiled egg spread all over the Garden, and next morning Mr. G. was kept busy testing eggs which, on breaking, all proved to be boiled, and the management then took a hand in the game and ousted Mr. Gunnerson from the Garden. The price of this marvel was the small sum of \$2.50. Yonkers, N. Y. WALTER C. MORRIS.

ST. CLOUD, BURBANK, OCALA, ETC.

In view of the many inquiries that are still coming concerning the Florida land-advertising schemes, we have thought best to give place to the following from the *Rural New-Yorker* of March 10:

You stated the exact truth when you said the lands of the St. Cloud Veteran Colony, of Florida, were almost worthless and almost uninhabitable. These land schemes requiring money to be sent in advance, and the land allotted by the promoters, always prove disastrous. The promoters work for their own interest; and to send them money is little less than idiocy. Any one seriously meditating such a course may well be watched by his friends and put under guardianship before he has a chance to consummate the deal. Though no mention is made of irrigation, drainage, and fertilization, these are very important items. An acre of land in Florida irrigated and fertilized for one year will cost the purchaser from \$300 to \$400 on an average. I have not seen an acre of land to be relied upon to produce a crop without from \$50 to \$80 worth of fertilizer, unless it be some of the muck land which does not require quite so much. If several crops are raised on the same ground, each one must have additional fertilization. And the market is very uncertain. I could tell you some distressing cases in connection with this colony. One man came all the way from Washington State only to find that the promoters had deceived him. M. C. L.

St. Petersburg, Fla.

It seems too bad to have to give so much space to one scheme. We have referred to it often; but when schemers take advantage of the sentiments of old soldiers, and, through pretended interest and comradeship, deceive them and rob them for personal gain, one feels justified in any honest effort to block the game. Do not send money to any land promoters anywhere. If you want to buy in any section, first investigate yourself or through trusted friends.

I am credibly informed that some of these "promoters" buy up blocks of land for, say, \$2.50 per acre, or even less, and then persuade their victims, they are getting a great bargain at all the way from \$10.00 to \$30.00 or \$40.00 per acre. Florida is a good place if you come, see what you are buying, and talk with people who have lived here for years.

THE "PROHIBITION LANDSLIDE" IN MISSOURI.

Mr. A. I. Root:—You will be glad to learn that Jasper Co., Mo., went dry by a handsome majority (excepting the city of Joplin), in the recent fight against the saloons. As a result of this election (closing yesterday) 28 saloons must cease doing business as soon as their present licenses expire, which will vary from one to about six months. The prohibition people are not going to stop at this; no, we are going to have a dry State; then we shall get Joplin, a very wicked city of about 60,000 population and some 40 saloons.

Jasper County's greatest resources are the lead and zinc mines. These mines employ lots of men, and they are nearly all whisky men; therefore we are very much elated over the prohibition landslide that has swept over Jasper Co. despite vigorous efforts of active opposition.

Oronogo, Mo., Feb. 5.

HOWARD PETEFISH.

On page 97, Feb. 15, it is asked, "Does alsike or white clover cause bloating in cattle?" I think not unless left till it gets large before pasturing; neither will red clover. Cattle that are very hungry should not be turned on to such pasture more than about one hour the first time, and that after the dew is off. I was raised in Hardin Co., Ohio, and had some experience with the bloating of cattle. After they get used to it there will be no danger of bloating.

Cowden, Ill.

A. W. SPRACKLEN.

Gleanings in Bee Culture

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EDITORIAL

By E. R. ROOT

NEW DRESS OF TYPE.

THE reader will notice the new dress of type. Our big subscription list, entailing heavy runs on the type, wears our faces much faster than formerly. While a thousand dollars' worth of type would formerly give us some two or three years of service on our journal, the same investment will run now scarcely a year.

FAKES AND FAKIRS.

THE bee-keeping industry does not seem to be cursed with a lot of fakirs as is the case with the poultry industry. The bee business has fewer and better journals, and of a character that will not accept fake advertisements. The time was, in the olden days, when there were advertised moth-traps, bee-balm for drawing swarms, worthless patent hives, certain controllable bee-hives, and the selling of patent-right territory. These have all disappeared; but as one looks over the poultry journals of to-day he sees the devices for testing eggs, testing the sex of eggs, and a lot more things of a like nature that are fakes of the worst kind. Pick up any of our bee journals and you will find only straight honest goods advertised.

FOUL-BROOD LEGISLATION IN MASSACHUSETTS.

ON March 25 the House of Representatives of Massachusetts passed an act having to do with the suppression and control of contagious bee diseases, and the matter is now in the hands of the Senate. It would be well for all interested to write to their Senators at once, urging their favorable consideration of the bill.

The proposed bill provides for the appointment, by the State Board of Agriculture, of a competent person as inspector of apiaries, who may in turn appoint as many as three deputies to assist him. The inspector's duties include the preparation and distribution of literature, inspection of apiaries, etc. Sections 3 and 4 make it an offense to keep diseased colonies except by an order in writing from the inspector that such are held in quarantine. Section 9 pro-

vides for an expenditure of a sum not exceeding \$500 during the present fiscal year, in carrying out the provisions of the act.

NO FLOOD OF HONEY FROM SOUTHERN CALIFORNIA THIS YEAR.

THE following letter just received from J. W. George, who is in close touch with the situation, will explain.

From present indications California will not flood the country with honey this year. What earlier looked like a bumper crop in the coast counties looks very discouraging now. My bees are fully a month behind what they were a year ago; and our cold April winds have commenced to blow, and that will retard them a good deal.

There have been several carloads of bees shipped into the valley this winter; but with one exception our two-mile-limit rule has been observed, and it is more than likely that the man who has disregarded the custom will be sorry of his bargain before the summer is over. The man who is being crowded owns and controls about 1400 colonies, and he will certainly keep up his end; besides, he has the sympathy of every bee-man in the valley.

There is another problem confronting us now. Black brood was quite prevalent in the San Joaquin Valley last season, almost wiping out some yards. But the supervisors of this county are awake to the interests of the valley, and at their meeting the first of this month they passed an ordinance compelling all bees to be inspected at Imperial Junction; and as that is the only way for them to get into the valley we stand a pretty good chance of keeping it out; however, it will be well for every one to be on the watch, and at the slightest indication of any thing wrong the inspector should be called in.

Practically all of our last year's crop is out of the way. I think a hundred cases is about all that is on hand at present.

Imperial, Cal. March 28.

J. W. GEORGE.

It is strange that the season seems to be late in that section of the country, while it is at least a month ahead in the Eastern States.

Later.—March 31st Mr. Mercer writes:

A few days ago we had 1½ inches of rain. This will help us some, but not enough to make any thing like a crop of honey.

Ventura, Cal., Mar. 31.

BEE-KEEPING ON A LARGER SCALE; TEN-FRAME VS. EIGHT-FRAME HIVES; POWER EXTRACTING-OUTFITS.

THERE are many evidences from bee-supply houses that show that the tendencies now are toward ten-frame rather than eight-frame hives, and large four, six, and eight-frame extractors rather than two-frame machines. When the power-extractor outfits were first put out it was not thought that there would be much of a demand for them; but in the West, where bee-keeping is carried on in any kind of large scale, power outfits are more and more supplanting hand-power extracting.

The time was when the eight-frame Langstroth hives took the lead. While they still occupy a very prominent place in the supply houses, the ten-frame hives are gaining ground every day. From some experiments that we have been conducting at one of our outyards, the ten-frame outfits seem to be in the lead, not only in wintering, but for honey. Father Langstroth figured out very carefully this brood-nest; and while a cubical brood-nest is theoretically correct, perhaps the dimensions that he gave us are more nearly right from a practical standpoint.

The eight-frame Langstroth hive came into existence because it was supposed that the ten-frame was too large for the production of comb honey. Later experience shows that, if there is to be any reduction in the size of hive-bodies or brood-chambers it should be along *vertical* rather than lateral lines; hence we see a strong tendency growing more and more toward the ten-frame hives, shallower than Langstroth, otherwise the same dimensions, especially shallow extracting-supers.

As we have said before in these columns, where one runs for extracted, the ten-frame is much to be preferred; and even if he wishes to confine himself to the production of comb honey, it is doubtful if he would gain any thing by adopting the eight-frame width.

The tendency all along seems toward a standardization of supers, covers, and bottoms as well as hive-stands, for there is nothing more annoying than to have two widths of hives in a yard, or different yards, one with eight-frame and the other with ten-frame size. As the latter seems to show a little the advantage in the production of extracted honey, and is probably nowise inferior for the production of comb, it is not at all surprising that the whole bee-keeping public seems to be turning more and more toward the ten-frame width of hive.

THE REMARKABLY EARLY SPRING IN THE EASTERN STATES; EXCELLENT WINTERING AND SPRINGING OF THE BEES.

FORTUNATE indeed it was that bee-keepers in most of our Northern States have had and are having a very early spring. Settled warm weather came on in many localities about the first of March—something that was very unusual. A year ago at Medina we did not have really good bee weather until along toward the first of May, and even after that the weather was cool and unfavorable.

After our very severe winter there probably would have been a good many losses throughout the country had there not been an early spring. As it was, the weather moderated in the nick of time, brood-rearing started, young bees hatched out to take the place of survivors dying off. It follows, therefore, that, even if unfavorable weather should come on, there would be a large force of young bees in most colonies of practically all the northern and eastern States, and

to a great extent in the western States. When we say "eastern" States we have in mind territory east of the Mississippi.

Speaking of the spring in general, we have been having an old-fashioned spring, and, we may say, an old-fashioned winter. It is the kind that we remember in our early childhood days, when it was cold all winter and then it merged suddenly into balmy spring. For the last twenty-five years we have been having what are called open winters, many days of which the bees could actually fly when wintered outdoors. This class of winter in our locality would continue on clear up into the first of May, it being neither winter nor spring. Brood-rearing would get started, then get a bad setback by sudden cold that would last a week or ten days. The past winter and spring has been a delightful contrast. We had our winter, with good stiff steady cold, and now we have been having our spring—beautiful balmy days when all nature seems to be giving up praises to God for his goodness.

While it was getting a little dry in some sections, heavy rains came on in the nick of time; the ground is soaked, and the clovers and all plant life seem to be showing up with unusual luxuriance. We never saw a spring when the prospects for fruit-bloom and clover were more favorable, and, according to our prophet, Virgil Weaver (see page 197, March 15), whose prophecy is based on a series of observations made for years back, this should be a *clover* year. He predicted over a year ago that last season would be a failure, and his prediction was almost literally fulfilled for the section of country he outlined.

THE STATEMENT OF A HIGH AUTHORITY IN FRUIT CULTURE ON SPRAYING.

"The American Apple-orchard" is the title of a book by F. A. Waugh, recently published by the Orange Judd Co., of New York. It contains over 200 pages of interesting and valuable matter. Whether one is interested in growing fruit or not, he will find this book very readable. If he is an apple-grower he can not afford not to have it. It reminds us of the time we used to read the Tim Bunker papers, years and years ago. While we were not at all interested in agriculture, yet Tim Bunker's writings were so entrancing that we followed his series of articles as we would follow a serial story.

Well, this F. A. Waugh is a writer a good deal after the same style. We mention his work here because of the author's high standing in fruit culture, and because he advises against spraying trees while in bloom. Those fruit-growers in the vicinity of our bee-keeping friends, who insist on spraying at the wrong time in spite of the advice of experiment stations, all over the United States, and up-to-date fruit-growers, should be shown a copy of this work. If they are so behind the times as to spray while the trees are in bloom they have a lot to learn, and it would be dollars and dollars in their pocket to purchase a copy of this work and

read it carefully. We are not sure but that bee-keepers can afford to buy it and loan it out to their fruit-growing neighbors. For the present, at least, we can not forbear copying a portion of chapter 11, entitled "The Insect Campaign." Under the head of "Codling Moth," the worm that so often turns one's stomach as he bites into an apparently sound apple, he says:

This is one of the best known and most widely distributed enemies of the apple. Newly settled districts have nearly always enjoyed a temporary immunity from this pest, but experience has shown that the moth can not long be kept out of any commercial apple-growing district. Apparently the ravages of the codling moth are more serious in central and southern latitudes, where two or three, or even as many as four, broods are hatched in a year. However, the campaign against this insect is an annual one, and has to be fought in practically all the commercial orchards in the country.

The principal preventive of damage is the spray-pump, using poison sprays. Paris green is largely used at the present time, but is being generally supplanted by lead arsenate. Thorough spraying at the right time with these insecticides will very greatly reduce the percentage of damage. Indeed, in many cases the work of the insect is practically eliminated. As in dealing with every other insect or fungous pest, thorough spraying at the proper time is highly essential. The proper time in this case is within one week to ten days after the falling of the blossoms. A longer delay can not be made with safety. After about 10 days the calyx, or blossom leaves of the young apple, close and the apple turns to a pendant position. Before this time the newly set fruit stands erect with the calyx lobes open. A poison spray properly distributed falls into this calyx cup and the poison lodges there. As many of the young larvae enter the apple by eating in at this blossom end they secure with their first meal a taste of poison which usually prevents any further apple-eating on their part.

Special attention should be called to the fact that apple-trees should not be sprayed while in blossom. Spraying at this time is not always totally without value, but in many instances it is not only unnecessary, but even highly dangerous to the crop. Under all circumstances it is very likely to poison the bees working on the apple-blossoms. This sort of damage is far-reaching in many cases; and as the bee is one of the fruit-grower's best friends we can not afford to murder whole swarms in this way.

This early spraying, just after the blossoms fall, will not usually catch quite all the codling moth, even all the first brood. When the second or third brood hatches later in the year a still smaller percentage can be poisoned by the arsenical sprays. Nevertheless it pays to give additional sprayings for this purpose in case the second and third broods appear to be large.

Note the special paragraph in italics, which are ours.

The price of the book is \$1.00 postpaid. It can be obtained of the publishers, Orange Judd Co., of New York, or of us.

AUTOMOBILES FOR OUTYARD WORK.

QUITE a large number are asking when we are going to give that extended article on automobiles, especially the article describing the machine or machines that will be most suitable for bee-keepers' use.

We have been gathering data from a good many sources, and hope to have ere long an article by which one can make a wise selection of a machine. We have no agency, and no ax to grind, and therefore shall look up machines that have earned a reputation for reliability and economy of up-keep, as well as low first cost. For the benefit of some of our readers who can not wait, a preliminary statement should be made. In the

mean time the Brush, made by the Brush Runabout Co., of Detroit, costing \$485, we believe to be a thoroughly reliable little car. The Reos—one, two, and four cylinder—are all first-class. We have had one and two cylinder machines in operation for the last three or four years. Cost of maintenance of two-cylinder touring-car, capable of carrying five passengers, has been less than \$50.00 a year, taking into account adjustment, repairs, and tires. This, of course, did not include gasoline, which will be from 12 to 15 miles per gallon for this type of car. The runabout Reo and the Brush will average, probably, from 20 to 25 miles to the gallon; indeed, the Brush has been known to make even 30 miles on a single gallon. While these \$500 cars carry only two passengers, a little wagon-box can be extemporized on the back to carry light freight. The Ford is also an excellent machine for the money. The Brush, Ford, and the Reos are pneumatic-tired outfits.

For all kinds of roads, especially mud, slippery mud, bad sand, we do not know of any thing better than the ungainly looking high-wheeled automobiles, with solid-rubber tires. This type of machine is usually not as well designed or built as those having pneumatic tires; but the one made by the International Harvester Company, of Akron, Ohio, bears an excellent reputation. The particular advantage of high wheels and solid tires is that the cost of tires is a very small item. There are no repairs on the road, no punctures, and these high buggy-wheels will run in mud as well as any common horse-drawn buggy; will not skid nor slip, as we know from some practical demonstrations that we have seen. The pneumatic-tired machines, while they can be made to negotiate mud, are not primarily mud-going machines. Do not let any agent or dealer try to convince you that he has an air-tired auto that will go in mud as easily and with as little danger as a common buggy. The facts are, pneumatic-tired machines slip and skid badly in thin mud, and it is a little dangerous to drive them along roads slanting toward a ditch or an embankment. On the other hand, the self-propelled buggies will negotiate roads slightly muddy about as well as roads that are dry or dusty. For year in and year out we are convinced that, *if well built*, they are coming to stay. They are awkward-looking, to be sure, and are not in keeping with the general styles of the pneumatic-tired low-wheeled machines, nor are they as fast. Unfortunately, quite a number of high-wheeled machines are poorly built and worse designed. Look out for all such, unless you want to pay a big repair bill and keep tinkering on the road. As soon as we can learn what buggy-type machines are reliable we will give a list of them. In the mean time we are safe, we think, in recommending the machine made by the International Harvester Co., of Akron, O. It is made in a large factory that is turning them out by the thousands.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

TEXAS ought to be a better honey State than it is with all that bigness shown, page 224.

THE GERMAN bee-keepers' association (Imkerbund) now numbers 90,062 members. —*Leipz. Bztg.*, 30.

AS TO foul-broody bees swarming out when thrown on foundation, doesn't it make a difference which *kind* of foul brood?

DR. BRUENNICH says, although his queens stop laying by August 15, colonies come out strong in spring on account of the bees' *longevity*. He thinks that is ever so much better than a lot of bees reared late to use up pollen stores. —*Schwz. Bztg.*, 60.

IDEAL conditions for taking out bees this year. March 20, soft maples bloomed. At dusk, opened cellar wide. Next morning, 31°, bright and still. Partly shaded cellar window. Quietly set bees on stands, closing entrances to one square inch or less. By noon, 62° with all bees out. Flew gloriously; no mixing; no robbing.

FOUL BROOD utterly destroyed an apiary of 20 colonies. The hives were sold to surrounding bee-keepers, and in every case took the disease with them. —*Schweiz. Bztg.*, 144. [The same thing happens in this country, and only emphasizes the great importance of an effective State law that will stop work of this kind. A bee-keeper who is so ignorant or indifferent to the rights of others should be held in check by a law that will protect those who are posted or have regard for the rights of others. —ED.]

JOHN H. LOVELL, p. 213, from what you say I suppose I said something about bees and roses not quite on the square, but you don't give page, so I'm left to guess. Perhaps I insisted that bees get nectar from roses. If so, I beg pardon. I don't know that they do, but I do know that they tear the buds to pieces. You say they are "looking for nectar." Don't you think "the mental attributes of the honey-bee are far too high to permit" it to do all that digging when "looking for nectar" where there is none?

ERLE SARGENT, I'd like to answer your seven questions, page 236, but the "boss" doesn't like me to talk "territory." But he may allow me just to whisper to you that, your foundation being wrong, your whole fabric topples. You assume that the man who owns land owns the nectar on it. Not a bit. He can't sell it; can't prosecute any one for stealing it; so he doesn't own it. So there, now. [The discussion of the right to certain bee territory we thought best to close for the present at least. We are no nearer a solution to this much-mooted question than we were twenty-five years ago. If there were as much diversity of opinion

among our legislators as there has always been among bee-keepers themselves we could never get a law that would give exclusive territorial rights. There would have to be united action before our legislators, no matter how favorably disposed, would pass a law. —ED.]

I DON'T KNOW enough to know whether it is better to disinfect all foul-broody hives or none; but here's a question: If it's necessary to disinfect a hive, is that enough? If there is danger from a spore on the wall of a hive, is there not danger from one on the stand at the entrance? If so, is there not danger from one on the ground close to the entrance? or further out? Just how far from the entrance does danger end and safety begin? Here's what I suppose the situation here: For every spore left in a hive there are 100 or 1000 of them on the floor at the entrance, and they are still plentier on the ground, thinning off as the distance from the entrance increases; yet for robs the ground is covered with millions upon millions of spores. Is there *no* danger from any one of these if there is danger from one on the wall of the hive? [The entrances and even the alighting-boards should be disinfected just as much as the rest of the hive. Years ago, when we disinfected our hives by scorching, we held the hives with a pitchfork over a bonfire and allowed the flames to strike the alighting-boards at the entrances. A common gasoline torch will do this work very effectively. —ED.]

K. FRANKE made a dozen fertilizing boxes with double glass. He saw a number of queens each return two or three times with mating-signs. The queen was balled for an hour upon returning unless she returned without mating-signs. —*Deutsche Bzucht*. [This matter of balling queens just returning from a mating trip depends upon conditions. We have just been talking with Mr. Pritchard, who raised 3000 queens last year, and who had abundant opportunity to observe and investigate. Under normal conditions, he says, bees will not ball their queen when they come back to their hive, whether fertilized or not. Sometimes bees will follow after a queen and pull away the filament that hangs to the end of her body. This question was also referred to our Mr. Bain, and he says this balling business depends on conditions. If bees have been allowed to get into a *habit* of robbing they may ball a queen, whether fertilized or not, when she returns from her flight. If a queen, on the other hand, he says, goes beyond the proper mating age for any reason, and fails to meet the drone, the bees may become disgusted and kill her by balling. They, or at least Nature, seems to know that an old virgin will probably not meet a drone, and hence she had better be killed. This principle applies in the case of a colony with a clipped queen that has tried to swarm repeatedly, and on the third or fourth failure to go forth with the queen the bees will probably ball that queen, thinking it is high time to get another. —ED.]

Siftings

By J. E. CRANE, Middlebury, Vt.

Bees appear to have wintered well in this section.

If handling bees on a float shows off to as good advantage as in the picture on page 13 it must pay well.

From W. Mares' experience it would seem that the heat has quite or nearly as much to do with non-granulation as the sun's rays—page 771.

It looks to me as though the steam-heated uncapping-knife is one of the great improvements of the year in the line of extracting honey.

Mr. Holtermann's observations as to the value of bees fertilizing buckwheat-blossoms, page 5, are well worth remembering, as it adds more evidence of the value of bees to rural industries.

Mr. Poulder's reference to paper bottles, on page 19, is of interest. Can Mr. Poulder tell us who manufactures them, east or west? I have had only the address of the owners of the patents who were apparently interested only in the sale of machinery and rights to manufacture. I believe they have a large future for the sale of honey as well as milk.

A good deal is written these days about foul brood. It has been putting in its deadly work for several years in the southwest corner of our Green Mountain State, and it has been recently reported in the northwest and northeast corners. At the annual convention of the Vermont Bee-keepers' Association steps were taken to secure a foul-brood law for this State that will rid us of this scourge before it becomes more general.

On p. 778 Mr. Byer gives interesting facts about the law in Canada in regard to spraying fruit-trees. A kind of spraying other than for fruit-trees came to my attention by some of the Massachusetts bee-keepers, where poisonous mixtures were used to destroy the gipsy and brown-tailed moths. They told me the bees in the vicinity of such spraying were very soon destroyed. Could not a law be enacted that would compel such persons to use carbolic acid or something that would be distasteful to the bees so they would go elsewhere for their water?

Mr. Foster is right in saying that "too much can not be expected of the straw-board case. Several of these came to Denver from a distance of several hundred miles without any marks to show what the contents were." The honey was broken

badly. This is as we should expect, and we have always marked such cases so as to show their contents, and tried to get others to do so. If the bee-keeper will not mark his paper cases so as to show whether they contain honey or lead he had better use the wooden cases with glass fronts; but it seems that it is not much protection in the West, for Mr. Foster says, page 6, that the railroads out that way have claims for breakage on a very large percentage of the local shipments of comb honey.

For a score of years bee-keepers' have sought to put comb honey up in small packages; but to make bees work in a small section was, as a rule, to make them fritter away their time and accomplish little, so that it has, so far as I know, never proved a success. On pages 765, 766, Dec. 15, a method is described that has already been proved a success, which the editor modestly describes as "cut comb honey." I believe it would have been perfectly proper to put the head lines in larger capitals. I may be a little enthusiastic; but after reading over this article carefully two or three times I could have thrown my hat twenty feet high, and shouted "Hurrah! hurrah!" Just to think of honey selling at retail for a dollar a pound! Isn't it looking up some? And then to think that the whole business is already so well "Rooted" that no penny-wise and pound-foolish bee-keeper can kill it. A new industry? Yes, and one that is destined to exert a great influence in the use of honey in this country. I believe; for if the dining-cars and big restaurants use it, the smaller hotels and restaurants will soon follow suit, and want little services of comb honey at a lower price; and one person will tell another how fine it is, and thousands will see it used and learn to use it themselves who would not otherwise have ever thought of it. And John Jones, when he comes back from Chicago, will tell his wife what a delicious meal he had on the dining-car, of warm rolls, butter, and honey; and she will inquire of her grocer for comb honey, for some night she will want to surprise John with honey and warm rolls, you know, and so it goes. But, hold a little. We had better not all rush into the new industry; for if we do, while we may not kill it we may hinder its growth. It looks very much as though it were a better industry for the city than the country bee-keeper, and that more careful handling would be required after cutting up than it is likely to get when shipped some distance. Another thing, it would seem as though it should be used pretty soon after it is cut up, as the honey that drips from the comb would granulate and make a rather unattractive-looking service; or does the person who cuts up the comb let the small blocks stand on wire cloth a few hours till dry? [Yes, they are drained.—ED.] We would also do well to remember that there must be some waste from the edges of the comb, and other defects. A pound of honey occupies almost 22 cubic inches of space, or $\frac{1}{4}$ lb. $5\frac{1}{4}$ inches.

Bee-keeping in the South-west

By LOUIS SCHOLL, New Braunfels, Texas

The 1910 census will be an unfortunate one for the bee-keepers' showing. The editorial concerning it on p. 65 coincides with my mention of it, Dec. 15, exactly. As I had stated, Texas' showing will be about half an average crop census. While some States will fare better, others will be even worse off.

A GOOSE FOR A GOOSE.

Hey, Dr. Miller, don't those section-honey facts I gave on page 39 seem to strike you? Perhaps they strike you too hard. Yes, since I read it over in print I found what I had done—struck the section-honey producer a little too hard. And you, trying to get even with me, page 68, call me a goose in a roundabout way. When are *you* going to try some bulk comb honey? No need of your sympathy for our being flooded out, even if you join the Coloradans in a change.

OUR NEW QUEEN-REARING YARD.

Does it pay the honey-producer to rear his own queens? Some of our best apiarists claim it does not, while many others are raising their own queens. To get nearer the truth of the matter an extensive experiment will be made along this line in connection with our work this summer. For years we have purchased our queens, upon the advice of some of our best bee-men, but with more or less unsatisfactory results. Resting on the supposition that our efforts at rearing our own queens can give us no less satisfactory results, if not better ones, we are making the trial.

We believe we can rear our own queens cheaper than we can buy them from some one else; that we can have better queens as a result of our own selection and careful breeding than those generally obtained from the average "rushed-for-queens" queen-raiser; that we shall have better results with queens right from our queen-yard over those that have been subject to several days' rough usage in the mails, and that we can have our queens just when we want them, without waiting for delayed orders, which alone often amounts to severe losses.

With as many as 26 apiaries for honey production we have a splendid opportunity for making a selection of breeding queens from which to raise our new queens. For instance, in one of our apiaries a colony of pure Italians has been the record colony for three years in succession, with only a few others coming up to it, first one season and then another. Such an excellent colony is good enough for a queen-yard, and so we took it there. In this way all the best colonies from each of the various apiaries find

their way to the queen-rearing yard. It gives us the best possible from hundreds of good colonies concentrated at one place. This place is an ideal one for the rearing of good queens and perpetuating the good qualities of the cream of our apiaries. Is it not possible thus to obtain some good results?

Of course it takes time to do this work; but I certainly believe that such a branch or department should be kept in connection with any large well-regulated system of apiaries, just as well as other lines of business have their different departments. Then there should be a suitable person in charge of that department. If we count on the superior queens that should be obtained in this way, the money saved that would otherwise go to others for queens, and an increase in our honey crops that must surely result through careful selection and breeding, our efforts should not be wasted.

While we have, from years of selection, some stock as good as may be desired, we by no means expect to stop importing into our yards new blood from some of the leading queen-breeders from time to time, toward still further improving our strains. Together with this we shall always employ the best, latest, and up-to-date methods in queen-rearing, so that our experiments shall not lack in that respect at any time.

A LACK OF SPRING FLOWERS.

In addition to sufficient stores left the bees in the fall for the heavy spring brood-rearing a vast number of native spring flowers have generally been a great aid. But, due to more or less periods of drouth in the fall, winter, and this spring, there are fewer of these flowers this year than we have had for many years.

In consequence of this our colonies that had more stores early in the spring than for a number of years have drawn on these so heavily that many are in need, and have to be given from the heavier ones; and unless our April mesquite flow yields soon it may become necessary to feed.

The ground is covered with bloom in a fair season during April, as shown by the illustration on page 258. This is our State flower, the blue lupine (*Lupinus subcarnosus*), or called "blue bonnet" or "buffalo clover" by many. It grows in great profusion over the entire ground, making it look like a solid blue carpet for miles around. This presents a beautiful sight, and the perfume fills the air, the bees scampering amid the bloom in great numbers.

While the honey yield does not seem to be very great, it aids wonderfully with that from other bloom in building up colonies rapidly just when needed. It yields great quantities of bright yellow, orange, and red colored pollen. This year, however, the ground, usually covered by the blue carpet of bloom, is absolutely bare in most places, with only a few scattering plants in favored spots.

Conversations with Doolittle

At Borodino

CERTAINTY IN QUEEN INTRODUCTION.

"I sent \$10.00 for a special breeding queen. Now, have you any certain way of safely introducing a queen which has come on a long journey by mail?"

"The formula for introduction which comes with the cage and queen will answer very well where a man is buying from 10 to 100 untested queens, as the loss which occurs in using it is generally not large enough to pay for the extra work made by the absolutely safe introduction plans; but I had rather spend half a day on a very valuable queen than to run the risk with the ordinary instructions coming with the queen.

If you are willing to have the breeder in a nucleus, which many feel is best, then make a cage out of very thin wood and wire cloth, or of tin and wire cloth, large enough to take two of your regular-sized frames, and at the same time small enough so it will go into the hive and take the place of two frames. This is quite easily done where bright tinned wire cloth is soldered on tin ends and bottom. To this cage should be fitted a bee-tight cover. With the cage, go to any colony which can spare them, and get two frames of ripe brood—so ripe that you can see many young bees gnawing their way out from the cells. Shake and brush every bee off these combs and hang them in your cage. Now, before a window in a tight room, so if the queen should fly you can not lose her, open the mailing-cage and put her and the retinue of bees which came with her in the cage with the combs of emerging brood. Put on the cage cover, all secure, and hang this cage in any strong colony, letting it take the place of two frames, which, if they have brood in them, can be put where you took the two from which are in the cage. Now leave the cage for from three to five days, when, an hour or so before sunset, brush every bee off the outside and carry it to the hive where you wish the nucleus to stand, and hang it in this hive. Now carefully remove the cover and take out the frames of brood, placing them next one side of the hive, adjusting a dummy so it will make a little hive the size of the two combs. Fix the entrance at the opposite side of the hive from where the nucleus is, and put on the hive cover, allowing the few bees adhering to the cage to crawl out and go on the combs with the others at their leisure. In a week or so give this little colony another frame of ripe brood, and you will have a nice prosperous little colony from which you can secure larvae for queen-rearing as often as you wish, unless you raise queens by the thousand."

"Why do you have the entrance on the opposite side of the hive from the nucleus?"

"So as to prevent robbing. In all my

years of experience with nuclei, I never knew of a single nucleus being robbed out when established in this way. And very often, where robbing has started on a nucleus having its entrance right in front of the combs it contains, I have stopped it by changing the entrance, so to speak, by showing the combs over to the opposite side and putting the dummy next to them. In this way the bees from the nucleus go and come from the same place they have always done, and easily learn to travel across the bottom of the hive to their combs, so they are not bewildered as they would be by changing the entrance instead of the combs. A robber bee does not like to travel over a long space where there is danger of being grabbed by sentinels strung all the way."

"The combs of ripe brood should have honey enough in them to keep the little colony in good heart while in the cage; and when put in the hive, if there is not enough to make them prosperous a frame of honey should be set in next to the *side* of the hive, not next to the dummy. By thus setting, we put the honey this much further away from robbers, for they must pass clear through the little colony to get it.

"If you wish to introduce a valuable queen to a full colony of bees, take their queen away early in the forenoon, or long enough before so the bees will miss her presence a little before sunset, at which time take all the frames of brood and honey from the hive, and put in a division-board feeder full of feed. This feed is preferable made of granulated sugar, but extracted honey will answer. Set this feeder away from one of the side walls of the hive about the space of two frames, and with a bent wire hang the shipping-cage containing the queen and her escorts so the cage will come two or three inches from the back side of the hive and midway between the feeder and the side opposite it. Or it is just as well to put two empty frames in this space between the feeder and the side of the hive, allowing the caged queen to hang between them, down two or three inches from the top-bars. Before putting in the caged queen, uncover the candy, as per the directions accompanying the cage; and when all is ready, cover the hive. Now shake and brush all the bees off their combs down in front of the entrance to their old home, into which they will at once run; and, if done near sunset, few will take wing during the commotion which will soon commence when they find out the changed condition. They will run over the hive for two or three hours; but before morning settle down to the conclusion that they can not find their old queen or combs, clustering about the cage and new queen. The combs of beeless brood may be given in an upper story to another colony to care for during the next two days, or until the queen is out, and has commenced to lay in the comb which will be built from the food in the feeder when their old combs should be given back to them after the feeder and two frames are removed.

General Correspondence

IS IT THAT NEW BEE DISEASE?

Something that Attacks Adult Bees in a Peculiar Way.

BY B. I. GILMAN.

I am in trouble, and very much in need of your advice. I have about 25 colonies of bees in two apiaries. These bees went into the winter in very fine condition. Every colony was very strong in *young* bees, with plenty of honey. A light honey-flow the last of September enabled the bees to store as many as three combs of honey to each hive. They had quite a lot of pollen, also. The bees wintered splendidly. I looked over the apiary in February, and all seemed strong; but I noticed that the honey gathered in September had not been capped. I could not see that they had used any of it. It was all granulated. I did not examine the sealed stores any more than to notice that they were using them up; about March 1st I noticed flies at the entrance of some stands. I examined at once, and found the bees dwindled to a handful. In some cases the bees were gone, leaving frames of honey. I examined every thing and found the honey granulated—no pollen. In colonies that appeared not to be affected I found them building up nicely—brood, but no pollen.

After our experience of last year of a pollen famine and starved brood, which we quickly corrected after reading an article in *GLEANINGS*, entitled "Pollen Famine," we commenced to feed equal parts of first-class cotton-seed meal and flour, which the bees took readily for about ten days, when natural pollen began to come in. The bees, however, continued to die, and in some cases they left brood in all stages (eggs to hatching brood). The bees have diarrhea or dysentery—the alighting-board shows it.

We have been reading Dr. Miller's article, Nov. 1, p. 664, "Diseases of Mature Bees;" also the article that follows, "Animal Parasites as a Cause of Bee Diseases." We are afraid that this disease may be *Nosema apis* in some form, although the voidings are bright yellow, coarse, and very copious. There does not seem to be any distension of body or bowels in dead bees. The frames of the affected colonies are not "messed up" at all, excepting where robbers have worked on the granulated honey; and even there, there is no sign of voidings. We find no dead bees around the hives nor in them, excepting in two or three hives where the bees seem to have starved to death from want of food—our neglect; and even in there, no sign of evacuations on the alighting-boards or inside the hive. The disease seems to have "let up" in one apiary where the loss was about 10 colonies in 150—a big loss for

Southwest Texas. But at the home apiary they are still dying, but not so bad, however; and many affected colonies are building up nicely. In no case have we found a queenless colony.

The strongest colony in the home apiary, and one of the very few that have not been affected with this dysentery, has a golden Italian queen. This looks as though the golden queen were more immune than black or hybrid.

I will add that there are no apiaries within six miles of us; that some apiaries near Uvalde and Batesville are having heavy losses, probably from the same cause.

Pearsall, Texas, March 25.

[We have compared all the symptoms of the disease mentioned by Dr. Miller and Friedman Greiner, on pages 664 and 665 of *GLEANINGS* for last year. There are several things that suggest that it might be *Nosema apis*; although the voidings reported by you are yellow, you will notice in the articles referred to it speaks of the contents of the middle bowel being white. We do not know whether, in the downward passage, the contents become yellow or not. As it is, we are referring this to Dr. E. F. Phillips, of the Bureau of Entomology, and suggest that you send him at once bees that have died from this peculiar disease, and also a slat of wood or something showing the character and color of the voidings.

We would suggest that the affected colonies be put into a quarantine yard where there are no other bees, for we judge it would be dangerous to leave these bees that are affected in a yard where there are perfectly normal bees.

We can hardly think that the trouble can be due to pollen famine. While the lack of nitrogenous food affects the development of brood, it does not in any wise have any effect, direct or indirect, on adult bees. The fact that you notice that the bees are dying off in such large numbers shows that it is a form of dysentery; but as we have had such mild weather, if it is the old-fashioned kind we would naturally expect its ravages to let up after the bees get to flying. We should be pleased to know whether any of our subscribers have seen any thing like it.—ED.]

SPRING FEEDING.

Stimulation Usually Detrimental Because of Cold Weather that is Likely to Follow.

BY LEON C. WHEELER.

The advent of spring brings up again the mooted question of spring feeding. A few years ago, before I had tried it extensively, I was an enthusiastic believer in stimulative spring feeding; but as I began to make use of it in a general way I soon made up my mind it is largely a question of locality whether it would be a success or failure, and that in my locality the latter was the case.

When it was apparently settled warm weather I introduced my feeders and began feeding warm syrup, about half a pint daily. In a short time I could see quite a perceptible increase in the brood-rearing, and each hive contained all the brood the bees could cover, and I patted myself on the back. Conditions around the hive seemed to be about the same as during a light honey-flow; and as I watched their rapid up-building my enthusiasm for the system waxed high.

But my enthusiasm was destined to be short-lived, for there soon came a miserable cold spell of weather; and the bees, attempting to cover all the brood, lost down to a smaller amount than they would have had had there been no stimulation. When the cold spell was over, the dead brood was all dragged out unceremoniously by the bees, and deposited in front of the hives. Somehow as I examined those piles of dead brood my hopes of a bountiful harvest, which had been running high, suddenly dropped to zero. My enthusiasm for the system of spring feeding gradually oozed out. I was not entirely discouraged, however, but went on with the feeding until the beginning of the honey-flow. This honey-flow found the bees in as poor condition to gather it as any season since I have been in the business.

I have since tried it to a limited extent on a few colonies, beginning late in the season; and, while I have never had quite as bad luck since, still I have never been able to see that the colonies so fed showed any perceptible gain over those given combs of sealed stores, if, indeed, they did as well. The last two or three years I have made a practice of saving a lot of combs filled with honey gathered from the late fall flowers. This honey is not fit to use for winter stores, neither is it of any account to extract for sale; but for spring feeding it is excellent. Much of it is gathered so late that the bees do not cap it over, and will, for this reason, make use of it much more readily when set in their hives in the spring. As soon as the weather will permit, all colonies are examined and supplied with these frames of honey, each colony being given sufficient to last it until the honey-flow. Since using this method I have never experienced any difficulty in getting my bees in prime condition for the flow. Even colonies appearing to be very weak when opened up in the spring will usually, if given plenty of stores, be ready for the flow when it comes. If a few colonies do not appear to be building up fast enough to be in condition at that time I begin about two weeks before the flow, exchanging hatching brood from some of the overstrong colonies for eggs and unsealed larvæ from the weak colonies. This brings them to the required standard, and also helps to prevent the larger colonies from getting too crowded before the season.

Many writers have made the claim that a frame or frames of sealed stores would act as a sort of division-board in the hive, and that brood-rearing would be carried up to them and stopped. Now, this has never been the

case with me; and, in fact, it very often happens that the best colonies I have are those which come out in the spring with a hive crammed full of sealed stores.

As I said at the beginning of this article, I believe that locality plays an important part in this discussion, and I can readily believe that, in a locality similar to that of the late E. W. Alexander, for instance, or in any other place where the main flow comes on after a long spell of settled weather, stimulative feeding can be carried on with profit to the apiarist.

But where one is liable to have cold raw spells of weather, and even snowstorms, sometimes right up to the beginning of the honey-flow, the system is worse than useless.

Barryton, Mich.

[Our correspondent's experience is quite in line with the experience of others who reported on this matter something over a year ago. The latest practice for most localities is to *feed liberally in the fall*; then in the spring, if certain colonies run short, to give combs of sealed stores that have been held in reserve, or from some colony or colonies that can spare them.—ED.]

A PLEA FOR THE RETAILER.

Co-operative Selling vs. Individual Selling of Honey.

BY T. EDWARD DIENER.

The article by Wesley Foster, p. 105, Feb. 15, indicates that the writer has had some unpleasant experiences with unwilling retailers, as he winds up by condemning the whole retail business as being responsible for the high prices of all articles designed for consumption. It will certainly take more than one man to solve the economic problems of the day, as they are not to be laid at the door of the retailer. I am not answering the above article because I feel capable of solving the problem, but because I wish to see the retailers of the country justified. I myself am a retailer, not of groceries, but of men's wearing apparel.

In my estimation, retailers have been hurt by the statement that they charge an excessive profit; but the fact is that, while the retailers are compelled to advance prices continually of late, their percentage of profit has been reduced. Of course, there may be occasional cases of profits of 38 per cent, but the average is considered to be about 25 per cent, out of which 10 per cent goes toward the payment of the running expenses of the business, such as light, rent, help, etc. But this does not cover many additional risks that occur in some lines, such as damaged, rotted, spoiled, faded, or out-of-style stock. This comes out of the other 15 per cent, so that the retailer is allowed, say, 5 per cent on his investment, and perhaps a few per cent for the time he gives to his business. There are many

lines of goods that are sold near the cost price, on which the retailer can not advance prices.

Mr. Foster thinks that co-operative selling might help the problem, but I do not believe so. Co-operation is effected for the purpose of getting as big a price as possible. We have good examples of what co-operation does in the large city department stores in a retail way. They do not sell any cheaper than individual retailers, on an average, but they do screw down the wages to a sinfully low standard, the surplus then going into their pockets as additional profits. If some individual retailers should get that amount of work out of their help they would willingly pay twice the wages paid by the department stores.

This economic problem will be solved in time by evolution, but all of us will have to work toward that end. In visiting farmers I occasionally find cases of waste in a variety of forms, which, if guarded against, would help to reduce the cost of some of the things from the ranks of the producers. We hear many encouraging words in the agricultural press of the good prices that all produce is bringing, which goes to show that the producers have also contributed their share toward advanced prices. I do not begrudge them this, for they certainly work hard enough to earn it.

Men not fit for the retail trade soon find out that it is best for them to retire (a natural law of business); but this hardly helps to increase prices, for competition keeps prices down to a central scale or level.

Elizabeth, N. J.

BUCKWHEAT-GROWING.

The Ground Must be Plowed Six Weeks Before Sowing, to Get the Best Results.

BY PERCY ORTON.

J. H. McGowan's article, p. 151, on buckwheat-growing, interests me very much, as I am a New York buckwheat farmer. Plowing and preparing the land makes all the difference between a good and a poor crop. You who intend to raise any this year, paste this in your hat: Plow at least *six* or *eight* weeks before you intend to sow and harrow, or, better yet, *disk* with Clark's double-action disk harrow once each week. If the land was plowed the fall previous, so much the better. If you don't think this early plowing amounts to any thing, try early and late plowing in the same field, and see the difference. It will be one-third in favor of the early plowing. I raised 20 acres last season, which yielded 27 bushels per acre of silverhull. This makes the most and whitest flour per bushel—ours this year 27 to 30 lbs. per bushel, selling wholesale at \$3.00 per cwt.

I never sow as much per acre of seed as Mr. McGowan, and I don't wonder that he gets an enormous growth of straw when 1½ bushels of Japanese is sown to the acre.

With me that was always the variety that branched the most, had the greatest amount of false kernels, made the poorest flour, and the least honey. I have had no use for it on our farms for ten years. The old-fashioned buckwheat is superior to Japanese for flour and honey.

Mr. Alexander told me, three years ago next August, when I was there at his home, that the farmers in his locality did not produce as much grain or flour while raising Japanese as they did with the old-fashioned black or silverhull; that his bees would fly right over Japanese to get to the black or silverhull. I mentioned this on p. 1504, Dec. 15, 1908.

THE AMOUNT AND KIND OF FERTILIZER.

I want to say that my best yields came from plowing and harrowing the field six weeks previous to sowing, using per acre ½ bushel silverhull, 30 lbs. nitrate of soda, 100 lbs. commercial fertilizer containing phosphoric acid 8 lbs., and potash 8 lbs., together with one bushel of sifted wood ashes, all mixed together and sown with a drill. This field contained six acres, 4½ of which was plowed early, and the other 1½ acres plowed and fitted two days before sowing, which was done July 8, 1909, and gave a yield of 165 bushels. The 1½ acres plowed last did not average half as much as the rest of the field. One acre of this had been in potatoes the year before, and was heavily manured. I expected the largest yield on that one acre, but was mistaken, as the sod ground did the best. It is very hard work to reduce the crystallized nitrate of soda so as to have it pass through the drill; therefore I shall use a commercial fertilizer containing nitrogen, 3½ lbs., phosphoric acid 8 lbs., potash 8 lbs., in every 100-lb. sack; also one bushel of *sifted* ashes. Set the drill to run 200 lbs. of fertilizer to the acre.

One of the "old granny" whims is the time to sow buckwheat. I say, sow it any time after all danger of frost is over in the spring—here, any time from June 1 to July 1—the earlier the better. If you ever planted potatoes on an old buckwheat-field some seed from the old buckwheat will always come up, and such always have the plumpiest grain, even if it started to grow in May; therefore I don't take stock in late-sown buckwheat to prevent its "blasting" in the hottest weather, even if older persons say so; for in this section we sometimes have killing frosts as early as Aug. 27. Look out and get in between frosts.

Northampton, N. Y., March 7.

[One of the best crops of buckwheat we ever had was sown in the spring as soon as frost was out of the ground.]

We are interested in that statement to the effect that Japanese buckwheat is inferior, both in point of honey and flour to the old-fashioned kinds. If we are not mistaken, we have had reports before to the effect that, although Japanese furnished more straw and more bushels of grain, it actually furnished less flour and less honey. How is this, friends?—ED.]

THE AGENCY OF BEES IN FERTILIZING PLANTS BY MINGLING THE POLLEN.

BY E. R. ROOT.

[The following is a portion of a chapter on pollen, in the new edition of the A B C and X Y Z of Bee Culture, now in the press. As it shows the intimate relation between bees and flowers we reproduce it in these pages at this time so that our readers may see and verify some of the wonderful things in nature. It is important, too, that the bee-keeper be informed as to the intimate relation between his industry and that of fruit-growing. Some fruit-growers and farmers are so ignorant that they imagine their neighbors' bees are robbing their flowers. They are just the kind of chaps who spray when their trees are in full bloom. A knowledge of the facts, as well as a little diplomacy, is needed to get such men to see that, so far from killing the bees (the goose that lays the golden eggs), they should welcome them as their best friends. The facts are gleaned largely from Fletcher and Cheshire. The latter appears to have drawn to some extent from Darwin and Gray.—ED.]

Before we consider the wonderful little schemes of nature to bring about the work of cross-fertilization, it will be necessary to give a few of the common terms employed in botany to designate the different parts of the flower. In the accompanying illustration we have a case of what is known as the hermaphrodite flower, that is to say, a perfect flower that is capable of self-fertilization. In most of the specimens that we show, we shall present deviations from the perfect flower. In most flowers we have the male and female organs, the latter represented by what is known as the pistil at the top of which is a receptive surface called the stigma. Sometimes there is a tube connecting the stigma with the ovary. This is called the style. The male organs are designated by the name of anthers. These contain little granules of powder known as pollen. Around the male and female organs are what is known as the corolla, con-



—From Fletcher.

sisting of leaves of various colors, and outside of these is the calyx, usually green. The stem that supports the anther is called the filament. The nectaries are usually located at the base of the pistil or the bottom of the flower as at B. The main portion of the pistil called the ovary is what constitutes the embryo fruit. In order that this may develop, the pollen from A must be conveyed in some manner to the surface of the stigma as at C. The fertilizing fluid passes downward, causing the fruit to develop. It would be well to bear in mind these botanical terms in the description which follows in order to understand how beautiful and perfect is the design of nature in bringing about cross-pollination.

Something should be said regarding the evident intent of nature to bring about crossing between the species both in the animal and the vegetable kingdom. Among animals, inbreeding has a strong tendency to weaken offspring. The same principle holds true to a certain extent among plants. "A study of the devices provided by nature to insure cross-fertilization," says Dr. Fletcher, forms one of the most charming branches of the whole study of botany." The great naturalist Charles Darwin is recorded as saying that the general principle can be seen running through all branches of the animal and vegetable kingdom. Although some plants, he says, can be and are fertilized by their own pollen, it is always of greater benefit to their descendants if the flowers be fertilized by pollen from other flowers of the same kind growing upon other plants. Darwin summed up his observations with the statement that "Nature abhors perpetual self-fertilization."

—From Fletcher.



Since then, says Dr. Fletcher, "endless observations have confirmed the accuracy of Darwin's law; and it has been found that in the vast majority of plants special appliances exist which will secure a more or less frequent inter-cross." And then he goes on to say that these appliances completely exclude the possibility of self-fecundation.

Coming now to the special agencies for the fertilization of plants, we may say in a general way that there are two, the animate and the inanimate. Among the first mentioned may be included wind, rain, and the force of gravity. There can be no question but that pollen from some plants is blown not only from flower to flower, but, in some cases, clear out to sea. Cases are on record where pollen from certain species of pines has been found hundreds and hundreds of miles floating in the air and lodging in the rigging of ships. Rain doubtless has a large influence, because it spatters the fertilizing element from one flower to another. Gravity must necessarily convey the pollen located on the tops of the trees or plants to the blossoms situated further down, whether on the same or other plant of the same species.

Among the animate agencies for the distribution of pollen, insects (and especially bees) are by far the most important. To a very limited extent animals and birds may assist. While insects other than bees undoubtedly perform a very valuable service, the honey-bee, from the very fact that it is out earlier in the spring than all other insects, must necessarily be regarded as by far the most important means of bringing about cross-pollination among our fruit-trees; and even when other insects are in the air, it outnumbers any other species, and possibly, in some cases, all other species combined, a thousand to one. Its general shape and size, the special construction of its tongue and its legs, all together make it especially adapted for receiving and carrying pollen.



SALIX.

1. *Staminate inflorescence.*

2. *Pistillate inflorescence.*

—From Fletcher.

In the willows, for example, the male catkins, that is, the portion of the flower bearing the stamens, appear on one tree while the pistils appear on another. This technically is called staminate and pistillate inflorescence. As the willows are a source of honey as well as pollen, and as they come to bloom very early in the season, it is apparent that bees must play a large part in their cross-pollination. Common cases of male and female flowers on the same plant are found in the butternut, hickory, birches, oaks, and hazels. In some instances the male portion of the flower comes to maturity before the female, and *vice versa*. In others there seems to be an effort on the part of nature, through a special form and arrangement of the parts of the flower, to prevent self-fertilization. In this case it appears that the bee, or some insect, must carry the pollen from one plant to the other.

Mr. Cheshire in his magnificent work, "Bees and Bee-keeping," Vol. I., gives a number of very interesting examples of the work performed by bees. While he appears to have drawn from Charles Darwin and Prof. Asa Gray, his illustrations showing how Nature has sought to prevent self-pollination are so interesting and valuable, especially as they show the service performed by the bee, that we reproduce them here.

In Fig. 3 we have a cross-section of what is known as the common primrose (*Primula vulgaris*), that furnishes an example of

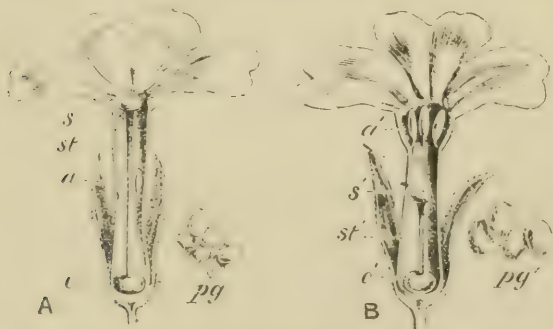


FIG. 3.—CROSS-SECTIONS OF DIMORPHIC FLOWER. *PRIMULA VULGARIS*, COMMON PRIMROSE. (After *Primulaeae*.)

—From Cheshire.

Cross-fertilization among some plants is brought about by the male and female organs, the stamens and pistils being located in different flowers, sometimes on the same plant or tree, and again on separate trees.

one of the most remarkable cases of how Nature has schemed to bring about cross-fertilization. This is what is known as a dimorphic flower, that is to say, there are two forms of flowers on the same plant. At A the stigma of the female portion reaches up to the mouth of the flower-tube. The anthers, or male portion, appear about half way down the flower-tube as at *a*. At B we have just the reverse: the stigma stands about half way down the flower-tube while the anthers are clear at the top. The flower-tube itself is supposed to be about the depth of the reach of a bee's tongue. A bee comes to A, reaches down at the point *o* for its nectar. The anthers half up dust the tongue at a point about half way up its length. After the bee has secured its coveted sweet, it passes to the next flower, B, where the upper portion of the tongue and mouth becomes dusted with the pollen from the anthers, and the pollen dust that was secured from the other flower A will just reach the stigma in the flower B. The pollen dust that was received from the flower B will just reach the stigma in the flower A. There is another significant and interesting fact, that the pollen granules of B are too large to be received in the stigma of B, but

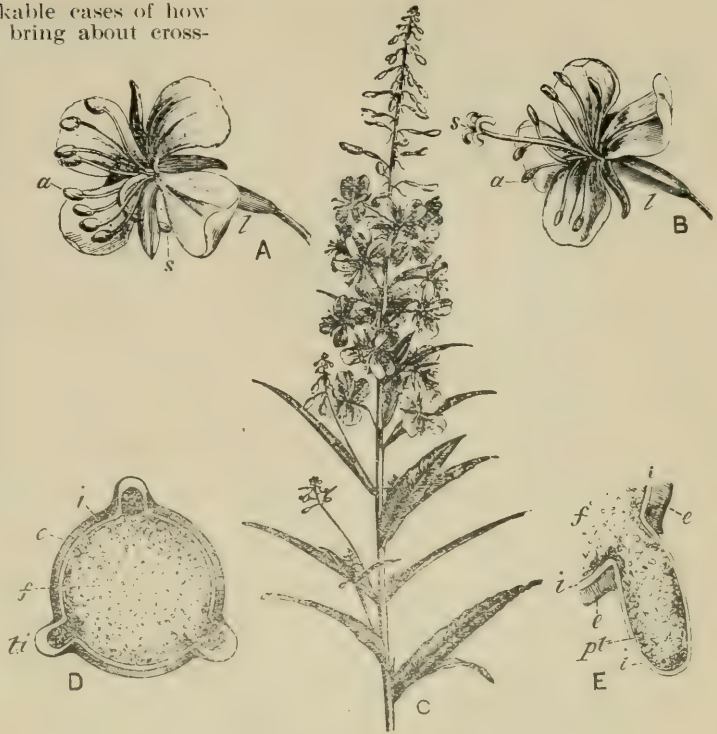


FIG. 4.—*EPILOBium ANGUSTIFOLIUM* (ROSEBAY WILLOW HERB), Order *Onagraceae*.—*Gray*.

just right to go in the stigma of A. Thus we see how nature has cunningly devised a scheme of what is called dimorphic cross-fertilization. In other words, she has so planned it that the pollen of the same flower can not fertilize its own stigma, hence we see the necessity of some insect of just about the right size, as the bee, of exactly the same tongue length that the bee has. Let us take another example.

In Fig. 4 we have a very pretty example of the fine honey-plant willow-herb: here the pollen of the anthers is sterile to the pistil or stigma of the same flower. At A, Fig. 4, we notice that the stigma, or the style, rather, as at *s*, is turned backward away from the anthers at *a*. At this stage the pollen at the anthers is ripe. A bee comes along, dusts itself over the pollen



FIG. 5.—*KALMIA LATIFOLIA*, Order *Ericaceae*.—*Cheshire*.

in the act of securing nectar, and then passes over to B of a flower of the same species. Here the pollen is gone from the anthers, but the pistil has straightened out and the stigma is ripe to receive the pollen that the bee brings to it from the anthers of A of the other blossom of the same plant. It will be apparent in this particular case, unless insects, particularly the bee, carry the pollen from A to B, there will be no fertilization of the plant, and the bloom will die without fruit.

In Fig. 5 we have another case no less remarkable of a near relative of rhododendron and azaleas. The filaments bearing the anthers are curved downward, the anthers themselves appearing to be held in little pockets of the flower. Apparently they have no power of their own to release themselves. But a bee comes along, alights on the blossom, and as it

in cross-sectional drawing of B. The anthers and the stigma both touch the bee on the under side of the waist where there is a good deal of hair. The result is that pow-

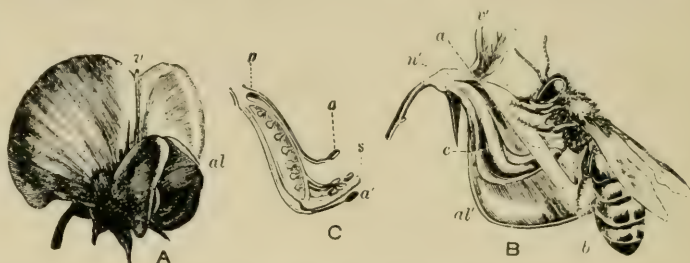


FIG. 6.—PAPILIONACEOUS BLOSSOMS, AND THEIR METHOD OF FERTILIZATION. —Cheshire.

der is dusted on the waist of the bee; and as it goes from one flower to another, it mingles the pollen and dusts it over the stigma. The general shape of the flower is such that the wind could hardly accomplish much in the way of cross-fertilization, and apparently the bee has to exert some strength in forcing apart the wings of the corolla in order to get its coveted nectar.

In Fig. 7 we have the familiar raspberry blossom. This is a case of where there is very little color but considerable pollen and nectar to attract the bees. The anthers and pistils separated from each other appear in large numbers on each blossom. The bee alights on the head and reaches down for the nectar. As it does so, it brushes against the large number of anthers and pistils. In doing so it mingles the pollen, fertilizing the flower with its own pollen and with the pollen from other plants.

In Fig. 8 we have the familiar example of the apple-blossom. Note there are five stigmas and ten anthers.

In many varieties of the apple, pear, and plum, the flowers are sterile to their own pollen; but, as Fletcher points out, they can be fecundated readily with pollen from flowers growing on another tree of the same species. We therefore see how very important it is to have insects, especially

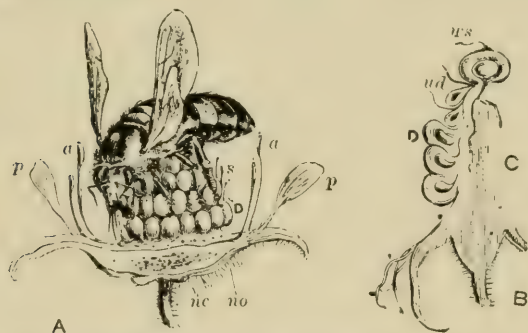


FIG. 7.—RASPBERRY (*RUBUS IDAEUS*, Order *Rosaceae*) BEING FERTILIZED, AND SECTION OF SAME. —Cheshire.

reaches around for the nectar jars these filaments loose, when they immediately fly upward, dusting the bees with pollen. This pollen now on the bee may fertilize the stigma or pistil of B; but as the bee goes from flower to flower the pollen is mixed, for it releases all the anthers, so that other insect visitation will continue on the process of cross-pollination. We have familiar cases of these anchored-down anthers in the rhododendrons, azaleas, and some of the swamp laurels. They are all honey-plants, but the honey is said to be poisonous.

In Fig. 6 we have a familiar blossom of the pea and bean, or technically known as papilionaceous flowers. At C we notice embryo bean or pea pod. At a we see the anthers and s the stigma. This whole thing is covered by a sort of wings. The bee comes along, pries them apart, and reaches for the nectar as shown

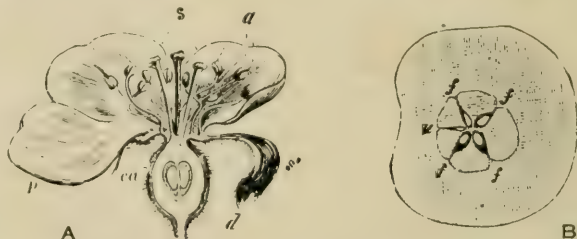


FIG. 8.—APPLE (*PYRUS MASUS*, Order *Rosaceae*) BLOSSOM, AND SECTION OF FRUIT. —Cheshire.

bees, to carry on this most important work of cross-pollination, without which there will be imperfect or no fruit at all. Many

and many a time a lack of fruit during some particular season is ascribed to the fact that frosts kill the blossoms, when, as a matter of fact, the weather has been such that the honey-bees were unable to get out, and thus carry on the work of cross-fertilization.

In Fig. 8 we have the case of an apple that was imperfectly fertilized. There is perfect seed and perfect fruit formation except on the side that has an indentation. The statement has been made by some prominent growers of apples that it is such fruit as this that rarely hangs long enough to ripen. The first severe storm that comes along causes it to drop prematurely. One fruit-grower told us there were thousands and thousands of bushels of apples every year that are nothing more nor less than windfalls because of imperfect fertilization. This same fruit-grower went on to say that if the bees could get in their work properly, and the trees were sprayed before and after blossoming, the number of windfalls would be very considerably reduced.

In connection with this matter, the reader will be interested in referring to the subject of fruit-blossoms, elsewhere in this work, where limbs of trees and whole trees have been covered with netting while they were in bloom. The fact that almost no fruit develops under these nets shows that fertilization brought about by the agency of the wind is insignificant as compared with that

accomplished by insects, and that, of course, means the bees, for almost no other insects are flying in the early spring when fruit trees come into bloom.

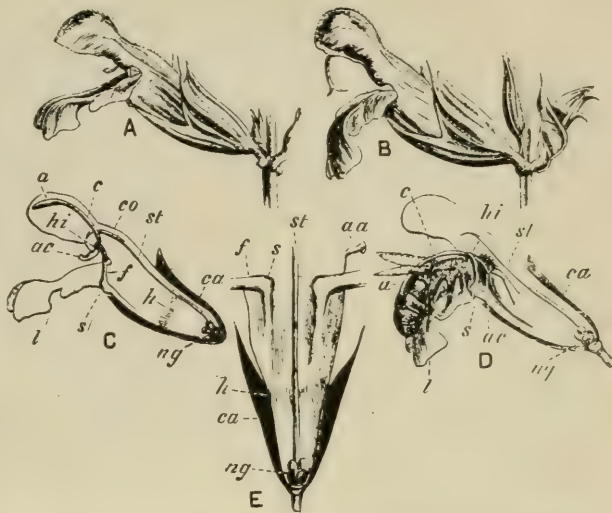


FIG. 9.—BLOSSOM OF *SALVIA OFFICINALIS*, Order *Labiata*—*Cheshire*.

In Fig. 9 we have a remarkable example of the flower of the salvias, among which we may mention the celebrated white mountain sage of California. Notice how Nature has made a convenient doorstep on which the bee may alight. But the more remarkable part of it all is, how the filament for the anthers is jointed. Turn to C, and it will be observed there is a spur or projection; namely, *ac*. The bee steps on the doorstep at *l*. Its head bunts against the projection, *ac*,

causing the hinge-like movement to bend the anther, *a*, down upon its back, dusting it all over with pollen. The act can be seen a little more perfectly at D. Notice how the jointed anther is painting the back of the bee all over with pollen dust. In this particular flower, as at D, the stigma, for the time being, is sterile to the pollen of that flower, but the bee goes over to another specimen of the same species, as at B. It alights upon the doorstep, and, with its back all covered with dust, the stigma projecting out from its little canopy above brushes over the back of the bee, picking up the pollen, thus securing the fertilizing element from some other flower of the same species. When we remember that large quantities of beautiful honey are secured from what is known as the white moun-

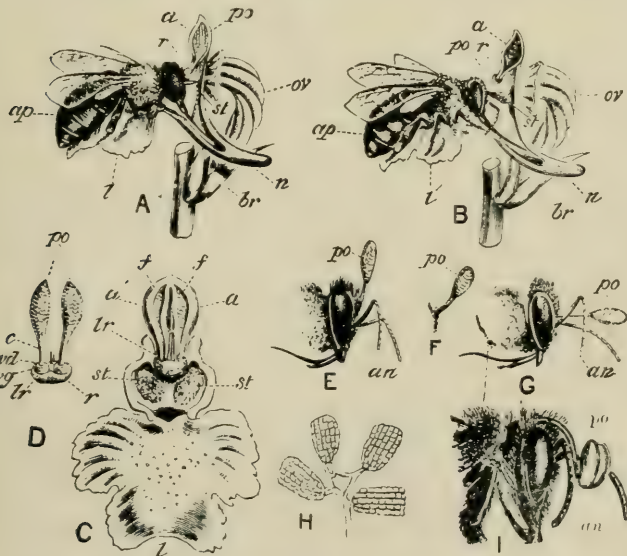


FIG. 10.—ORCHID (Order *Orchidaceae*) BLOSSOMS AND DETAILS.—*Cheshire*.

tain sage, of California, we can realize the importance of this particular plant to the bee-keeper. Without this cross-fertilization the plant would undoubtedly "run out," as we say.

In Fig. 10 we have a still more remarkable case, as shown in the orchid. This flower is a little different in that the anther-sac has a sticky substance on the end, as shown at *r* in A. This pod adheres to the bee's forehead as shown at E and G. With this queer appendage containing its sac of pollen, the bee visits other blossoms, and, as seen at B, butts its head against the stigma and dusts it over with pollen. Chas. Darwin points out that this beautiful experiment can be accomplished with the point of a lead-pencil; but as it is not presumed that any foreign object should come in contact with the blossom except the insects we can see how insect cross-fertilization is accomplished in this most remarkable manner.



A REAL HONEY SIGN.

[The plan you describe, though good, is quite old. It is an old trick to most honey exhibitors. Our back volumes will show a number of engravings of raised and depressed letters in comb honey that have been shown at honey exhibits. It takes a good honey-flow and good bees to make a nice job. Not all bees will do nice work.—ED.]

SIGNS MADE OF HONEY.

How to Teach Bees to Write.

BY HENRY W. BRITTON.

For a number of years I have been studying the bee, and it seemed to me that they could be educated to write, print, cut, and carve or engrave letters or characters upon the frames or sections of honey made by them so as to be used as a trademark.

With this idea in view I began trying to educate them; and after the first lesson given them, they spelled my name, *Britton*, backward, as you will see in the picture in the frame resting upon the hive; but after a few more lessons they spelled it all right as you can see by the frame I hold in my left hand.

This frame of honey is all capped over, having my name on it in raised letters.

These raised letters were made by the bees, and consist wholly of honey and wax. I have never seen any thing like this in any of the bee books or magazines, and believe it to be something new, and submit it to the readers of this magazine for their perusal.

At the Brockton, Mass., agricultural fair last year I received a special prize for this novel frame of honey, and also a premium for my observatory hive of "educated bees."

Stoughton, Mass.

WATER REQUIRED BY BEES.

Some Interesting Experiments to Show the Exact Amount of Water Taken by Average Colonies in a Season.

BY B. J. WORSLEY.

From my experiments I have found that a good fair-sized colony of bees will take from 8 to 12 quarts of water during a season. I use watering-troughs made of concrete, similar in form to the Alexander feeder. I used five troughs, four of them for the bees and the other one screened so the bees could not get to it. The screened trough was for the purpose of determining the loss of water, during the period, by evaporation. There is a river about 20 rods from the apiary. The rainy days I had to disregard, as I had no control over them.

I once placed a new Alexander feeder under a good colony, in the month of May, put in it half a pint of clear water, and found that the bees took it in just two hours and twenty minutes. The greatest amount of water is used during the breeding season, for there is a large amount of water in the young brood.

I tried the experiment of placing frames of candied honey in an empty hive and con-

tracting the entrance to a small space. I put flour on the bees at the watering-trough and saw those same bees, marked by flour, go directly into the hive having the candied honey, stay inside from twenty to thirty minutes, then come out and go to their own hives. Later on they came out, went to the troughs for more water, then back to the hive having the candied honey. The bees kept on working this way until they very nearly cleaned up the combs in several empty hives that I placed for the purpose.

My bees are stationed about 20 rods from a mill-pond. The water in the pond is drawn down through the day, leaving the banks wet so the bees can get on them and pump up their supply of water. I found them so thick that it occurred to me that if it was water they wanted I could place it nearer, so the watering-trough was brought about. I am not certain how much they got elsewhere.

I believe there are locations where, in dry seasons, near-by watering would be a help. Since using the watering-trough I fancy that I have cut them off the pond by certainly a half.

Yes, bees certainly use much water and quite a little pollen. I like to have a corn-

field nicely filled out for fall breeding. While they store pollen, I think they run short in a dry time. How they lug it in after a rain! I put it down as a fact that bees use water and pollen in their business.

Theresa, N. Y.

SPRING CLEANING.

A Handy Device for Holding the Frames While they are Being Scraped.

BY SIDNEY S. STABLER.

The accompanying photograph shows a device used at the apiary of the Maryland Agricultural College to hold frames in a firm position while scraping. It may be worth while for bee-keepers who make it their duty to scrape all brood-frames each spring to have one of these little "frame horses." They are just as big a help in scraping frames as the "wood-horse" is in sawing wood, and perhaps more, because the wood does not mind jarring as the bees do.

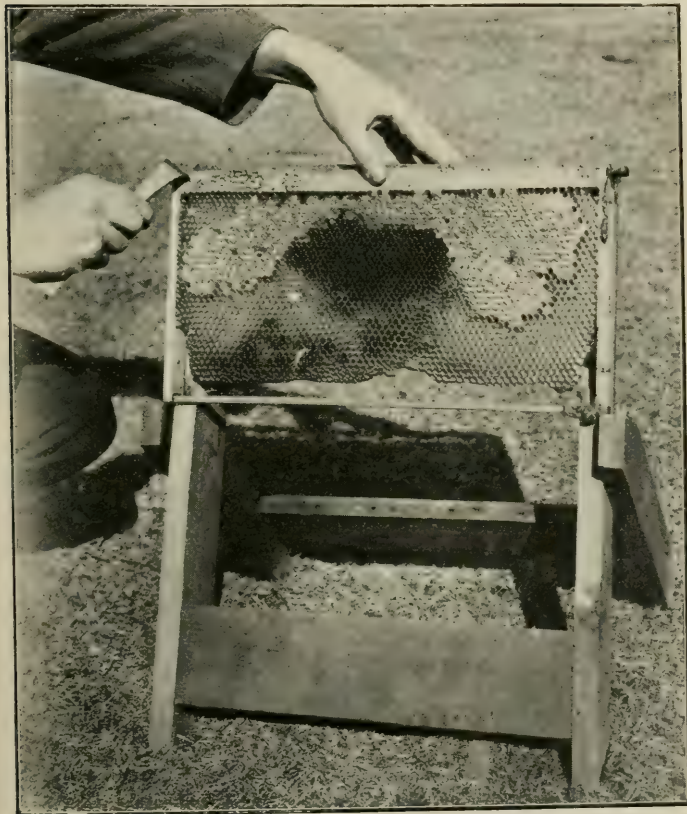
The construction is so simple that almost any bee-keeper can make one in a short time. Perhaps the best lumber to use is 1

×3-inch poplar or oak for the legs and braces, and just a thin strip of pine for the top-bar.

In using it I have a stool or box to sit on, and a hive-tool in my right hand and the horse in front of me. I sit at the back of the hive and take a comb from the hive and place it on the horse. I hold the top-bar with the left hand and scrape with the hive-tool in the right hand. Before I had this device I used to scrape over a box, but I like the horse much better. It will be noted that there is not much chance for bees to get mashed, as all the edges are purposely made sharp to prevent large points of contact.

With it we scraped all the frames from 20 colonies last spring, and intend to do the same this spring. We do not know how many bee-keepers make a practice of "spring cleaning" of frames; but we do know that too much of it can not be done, and that it can be much more easily done with some such device as this.

College Park, Md.



A SUPPORT FOR FRAMES THAT ARE BEING SCRAPED.
Photographed by Prof. A. B. Gahan.



Carpet of "Texas State Flower," the blue lupine (*Lupinus subcarnosus*). The almost entire absence of this annual spring carpet this year indicates a dry season in most parts of the Lone Star State. See *Bee-keeping in the Southwest*.

[There ought to be some sort of tray under the frame-holder to catch the wax scrapings, otherwise some of them will get lost. Wax in any form always represents cash.—Ed.]

TREATING FOUL BROOD IN A HONEY DEARTH.

Boiling Hives more Effective than Steaming.

BY P. C. CHADWICK.

In the East I never had foul brood; and when I met it face to face in this country I was somewhat nervous as to my ability to cope with it. However, as I was associated with Mr. J. K. Williamson my fears were soon over, he being a very careful observer. This article is largely due to his headwork.

In the spring of 1903 Mr. Williamson had his bees rented to two parties, one of whom, I am sorry to say, was not as careful with the disease as might be after having been warned of the possible existence of foul brood. The result was, in the spring of 1904 the disease had been spread by the interchanging of combs to such an extent that it was difficult to deal with it. The season was very dry, with no honey-flow; and with the usual tendency in such cases for bees to rob, it would have been absolutely ridiculous to have put these diseased colonies on foundation, as it would have meant starvation. We just watched them closely, and if any showed signs of being overcome by disease we melted the combs, scalded the hives,

and counted the colony lost save for the hive and wax.

Right here let me say that we have never had any trouble with hives used again after being properly scalded. Some of these colonies were carried over until the following spring with very little indications of trouble. Some we were compelled to melt up to save them from being robbed out, and the disease thus spread again. A few in which only a few cells appeared were "carved out"—that is, a small piece of comb was cut out around the diseased cells, and carefully destroyed; and, strange to say, most of the carved-out colonies are still intact, with no sign of the disease having reappeared after four years.

One colony, however, that was carried over during the dry year and put repeatedly on foundation the following season, and given nearly every known treatment for cure, during the following season was finally, as a last resort, sulphured at night, and bees, frames, brood, and honey were burned, after which the hive was scalded and used again. The wax from this colony might have been saved; but so many failures make one desperate, and thus it ended.

I do not believe Mr. Scholl's way of disinfecting, page 77, Feb. 1, is equal to thorough scalding, as this method does not reach the cracks and crevices as thoroughly as scalding water; neither do I see the object in scalding frames with lye and corrosive sublimate when hot water is just as effective, in my mind, and cleaner; besides, one can then save the adhering wax.

Redlands, Cal.

CHEMICAL COMPOSITION OF HAWAIIAN HONEYS.

BY W. P. KELLY.

For many years the chemical composition of most products of commerce has, in a general way, been known. In the manufacture of some of these the entire process is subject to the strictest control, and the finished product made to conform very closely to a given analysis. Included in the list of substances coming thus under chemical control may be mentioned various food substances, although their chemical composition formerly received only a general study. In recent years, however, the chemical composition of foods has been more thoroughly investigated. It is a strange fact that while, for many years, certain articles of commerce received the attention of expert analysts, a large percentage of the substances that go to form human food were not so carefully investigated. The farmer, for instance, is much concerned about the composition of the fertilizers which he applies to his fields, and often quite exacting in his demands; but the articles of food that he purchases are consumed with little inquiry as to their makeup. The average American has not taken the trouble to inquire into this question, and in this connection it may be stated that, at least until recently, we as a nation were far behind the more progressive European countries in regard to this point. A general awakening of the public conscience to a more intelligent inquiry concerning the purity of the substances of food, however, has led to a more diligent and careful study of their chemistry. Our Bureau of Chemistry of the Department of Agriculture, led by the efficient direction of Dr. H. W. Wiley, has devoted no small part of its attention to this subject, and, as a result, the American consumer is becoming better acquainted with the composition of his food stuffs.

Among the food products that have received such attention may be mentioned honey, although its composition has, in a general way, been known for many years. In bulletin No. 110, of the Bureau of Chemistry, is shown the chemical composition of honeys derived from a wide range of sources; likewise the subject of Hawaiian honeys was recently set forth in Bulletin No. 17 of the Hawaii Experiment Station. From these and other investigations it is evident that the source from which honey is derived determines in a considerable measure its chemical composition. The differences between the composition of nectar honey, such as white-clover honey, alfalfa honey, and algaroba honey, are slight, being principally those of color, aroma, and flavor; but the composition of honey-dew honey is strikingly different.

There are small variations in the composition of the same type of honey, as is shown by analyses of samples drawn from different places. This is due, in the main, to the fact that the honey-bee does not confine it-

self wholly to any one source of nectar, and, therefore, the average honey is a blend of various nectars, and also usually contains some honey-dew. As an average of many analyses, however, white-clover honey has been found to contain the following percentage composition: Moisture, 17.60 per cent; reducing sugar, 71.75 per cent; sucrose, 1.75 per cent; ash, .07 per cent; dextrine, .80 per cent; and free acid, .06 per cent.

Honey derived from the nectar of alfalfa contains 16.50 per cent moisture; 73.60 per cent reducing sugar; 4.4 per cent sucrose; .07 per cent ash; .34 per cent dextrine, and .08 per cent free acid. The famous algaroba honey, which is produced in such abundance in Hawaii, has been found to contain 17.1 per cent moisture; 80.3 per cent reducing sugar; 2 per cent sucrose; .44 per cent ash; 3.57 per cent dextrine, and .1 per cent of free acid. The above analyses are for nectar honeys. We will now consider the honey-dew type, which is produced so extensively in Hawaii. This has been found to contain about 15.5 per cent moisture; 62.1 per cent reducing sugar; 5.25 per cent sucrose; 1.3 per cent ash; 10 per cent dextrine, and .15 per cent free acid. From the comparison of the above figures, it is apparent that honey-dew honey is quite unlike nectar honeys in chemical composition, containing considerably less reducing sugar, and very much more ash, dextrine, and sucrose.

There are, however, still greater differences between nectar honeys and honey-dew honeys than are shown by the above analyses. When polarized light passes through a solution of nectar honey at a temperature of 20 degrees it is usually rotated to the left, while honey-dew honey rotates the plane of polarized light to the right. After nectar honey undergoes "inversion," as it is called in chemistry, rays of polarized light passing through its solution are again rotated to the left at a temperature of 20 degrees; while honey-dew honey, on the other hand, continues to rotate to the right after inversion. Right-handed polarization in honey has long been regarded as evidence of adulteration with commercial glucose or sucrose; but in the case of honey-dew honey this explanation will not hold for its right-hand polarization, since samples of known origin, and those free from adulteration, possess this characteristic quality. Its explanation is found in the high percentage of dextrine and other gummy-like bodies which are always found in honey-dew honey.

Notwithstanding the material difference in chemical composition between honey-dew honey and nectar honey, both are natural products, collected and stored by the honey-bee, and as such are free from adulteration in the usual sense of the word, and may, therefore, be used without fear of their containing commercial glucose or other added sugars.

Algaroba is the source of one of the most beautiful honeys on the market. It is almost white in color, and possesses a very delightful flavor and aroma; and, although it is but

little used for table purposes, since practically all Hawaiian honey is sold to the baking trade, it has but few equals and no superiors as a table honey. Honey-dew honey, on the other hand, is a dark viscid substance, and is wholly unlike other honeys in flavor, etc. It is entirely used in the baking and confectionery trade, where it is highly prized, since it possesses baking and boiling qualities superior to that of other honeys. By far the greater part of Hawaiian honey is neither algaroba nor honey-dew honey, but is a natural blend of the two. In fact, there is no distinct division between the two types, each merging imperceptibly into the other. It has been recently decided by the Pure-food Board that honey-dew honey may be sold under the pure-food and drug act by being labeled "honey-dew honey," and since it possesses such exceptional baking qualities, and is not brought in competition with table honeys, in so far as table use is concerned, it is quite certain that the demand for the product will continue to increase, and especially since it is now a well-established fact that honey-dew honey does not contain commercial glucose or other added sugars.

WINTERING ON HONEY-DEW IN A MILD CLIMATE.

Interesting Comparison of Vigor in Different Strains of Queens.

BY F. DUNDAS TODD.

The season of 1909 on Vancouver Island resulted in a complete failure so far as honey was concerned; but the bees did the best they could by storing up great quantities of honey-dew. It is needless to say I looked forward with considerable anxiety to the wintering, hoping the season would be one of the old-fashioned kind they talk about here when bees were confined to the hive for only a few days at a time. Pollen carried in on Christmas day, flights in the middle of January—these sounded good to me; but would they materialize in the day of need?

My duty, however, was to see that a reasonable amount of good stores was provided; so in the middle of September each hive was carefully overhauled, and an estimate was made of the stores, weak colonies being combined with three exceptions which I left as they were, to see what would happen. I have no desire to be a paragon of wisdom all at once, because you know a little foolishness provides a certain amount of excitement. Right here let me say two out of the three died, the survivor being the weakest of the lot.

Having learned the total quantity of stores on hand, the next step was to average by exchange of combs the quantity in each hive. The result was that about 17 lbs. of honey-dew was bunched in the center of the division (I use the divisible hive); then about 10 lbs. of sugar syrup was given to fill up the outside frames. Each hive thus had

from 27 to 30 lbs. of stores; but one was left with 40 lbs. of honey-dew and 10 lbs. of sugar stores to see what would happen. It turned up queenless in March.

Most of my bee-keeping friends did not feed until a month later. Probably they were wiser than I because it made more certain the consumption of honey-dew before winter set in. Given the same conditions again, I feel I would postpone feeding till the last possible moment.

The winter was not an open one by any means. Flight ceased by the end of November, and not a bee was seen until January 11, when sunshine and a temperature of 45° drew bees from most hives, some quite freely. Ten days later the weather was warm enough for a good flight; and as every hive showed signs of life the worst was thought to be over. Hives were hefted, and four that seemed light were given candy under the quilt. Out of curiosity the frames of one hive were quickly gone through, and note made of a patch of eggs covering a space three inches in diameter in one of the frames. On March 12 this same colony showed brood in four frames, but very little of it sealed. The overhaul of the apiary at that date indicated that egg-laying did not start until March 2, the day on which the first pollen was carried in.

On Feb. 8 one hive was suspiciously silent, and examination showed it to be dead of starvation, but with three frames of stores in the house—unfortunately, on the wrong side of the hive. Two weeks later the thermometer dropped to 18, and we got six inches of snow; but the thaw came on the 26th, with a temperature of 50°, and we had bees flying freely with snow on the ground. Four silent hives were opened, all being apparently dead, two hopelessly so. Two, being free of mold, suggested a possibility of a resurrection, so they were at once set over strong hives with wire netting between. Sugar syrup was trickled between the frames. Two days later one was alive, and therefore returned to its own stand; but the other was beyond hope of recall. This is the second time I have restored to life an apparently dead colony after a short cold spell.

Heavy rains followed the thaw. March 2 was warm and pleasant, so the bees flew freely, three colonies making a start with the carrying-in of pollen, the very first being the one headed by the best queen of last season's importation. It was in fine condition, having wintered with the loss of not over a hundred bees, as shown by an examination of the bottom-board on Feb. 15. About March 7 the weather was delightful, so the bees hustled in pollen at a great rate; and now was the time to make some estimate of inside conditions by outside signs. Several hives had plenty of bees flying about the entrance, but little or no pollen was being carried in; so, feeling suspicious, I overhauled the whole lot on the 12th, when the thermometer rose to 63°. In 21 colonies I found brood-raising was well under way; but 7 had no signs of eggs and no fresh pol-

len in the cells—in this respect being in great contrast to the colonies where brood-raising had been started, for there the golden-yellow pollen was conspicuous in areas as large as one's palm. Two days later the suspicious hives were gone through carefully; but no brood being found or queens visible, the colonies were combined with others.

By the middle of March the net result of my first experience in wintering with honey-dew in the hives was thus: Alive, 21; dead of starvation, 6; queenless, 8. The resurrected hive had, on Feb. 26, been combined with another whose queen was found lying outside. The combined colony showed brood in a couple of frames on March 12, but I noticed a slight dent in the abdomen of the queen.

Once the returns are in, comes the interesting work of making percentages of the results; but, unfortunately, it is not always easy to unravel the complications that naturally arise. For instance, I have bees in three styles of hives—eight-frame Langstroth, two division divisible, and one division divisible. Then I have at least three strains of bees, one being the old stock I bought here; another I got from Kentucky in 1908; the third from Texas in 1909. All in all, the stores were fairly uniform, as were the entrances.

I could not wait patiently for the final returns, but began to estimate from the number of dead bees on the bottom-board when I changed them on Feb. 15. One showed less than 100, while in others the corpses would have filled easily a pint measure—I am tempted to say a quart. I roughly grouped the hives into two classes of few and many dead, then proceeded to work out the results. First grouping by hives, I found that fifty per cent of the Langstroth fell under the heading of "many dead;" double division showed 16 per cent; single division, 6 per cent. Let it be noted here that, out of six Langstroth hives, five contained the old strain of bees. This is important, as later facts will show. On classifying by strains of bees I found 30 per cent of the old stock, 12 per cent of the Kentucky, and 16 per cent of the Texas had "many dead" recorded against them.

When the returns were complete I considered the death of the queen as equivalent to the death of the colony. Percentaging by hives first, I found one out of six Langstroths had died, equal to 16 per cent loss; three out of seven double-division colonies were lost, being 43 per cent; ten out of twenty-two single-division colonies died, being 45 per cent loss.

Turning next to strains of bees, I found half of eighteen old-stock colonies had become extinct; loss, 50 per cent; three out of eleven Kentucky stock; that is, 27 per cent; two out of eight Texas stock, being 25 per cent.

I have already reported in GLEANINGS great mortality among queens in this locality, hazarding the opinion that it was due to the lack of vigor in the stock, which, owing

to the isolation on an island, had probably become decidedly inbred, and the above figures would seem to confirm my previous suspicions. This summer will probably see the end of this strain in my apiary. However, it is but fair to say that all the old-stock queens in Langstroth hives, five in number, survived the winter, and were showing good results in egg-laying by the middle of March.

A year ago I was of the opinion that one hive was as good as another for wintering in; but this winter the Langstroth is easily first. So I have still one more guess coming; also a second, for a few days ago I cursorily examined a few colonies belonging to a man who had left the province at the beginning of winter. I found them in home-made hives of not more than a foot in cubic dimensions, with entrances galore, several in the bottom just a bee-space deep, an inch and a half long, and at least one in each front about four inches from the top, this being circular, of $\frac{3}{4}$ -inch diameter. As the bees were piling in pollen as busily as my best hives, I considered the colonies in good condition.

One hive had no quilt of any description, being merely covered by a plain board with cleats on two ends, so all winter it must have had more than enough ventilation not only through the upper entrance but through the top of the frames. Rain, wind, and frost had done their worst; but the bees were as spry as could be. The owner goes off for months at a time, and I could venture the guess he did not feed them in the fall, and, if not, they must have wintered on honey-dew. Such propositions make one ask, "What do we know about bees, any way?"

Victoria, B. C.

REAR VENTILATION AT THE BOTTOM OF THE HIVE.

How it Stopped Swarming.

BY S. F. PETERS.

I was much interested in the article "Ventilation of Hives during Summer," by J. P. Blunk, page 229, April 15, 1909. I had two colonies in Langstroth hives—one a new May swarm, and one from the year before. As soon as the weather grew warm I noticed a large number of bees kept from work by fanning, or ventilating hives by fanning; so I tried Mr. Blunk's plan by putting a $\frac{3}{4}$ -inch strip under each side of the hive, leaving a $\frac{3}{8}$ -front opening and a $\frac{3}{4}$ entrance in the rear, full width of hive. Having only two colonies near the house I cut a strip of the proper length and height to slip into the rear entrance for cool days and nights. By reversing I could have a $\frac{3}{8} \times 4$ -inch or $\frac{3}{4}$ entrance, width of hive front. I watched my hives closely, and had entrances according to weather.

As soon as I made the double entrance all fanning was stopped, and bees went to other work. Sometimes the weather would get

warm while I was away from home, and I would find plenty of bees ventilating; but inside of ten minutes after the entrances were opened the full extent, all fanning stopped, and the bottom-board would contain only bees on the move, in or out of the hive.

When these colonies got strong enough to cluster outside (of only half a pint or so), I added another super to give them plenty of room. I put two rousing colonies into winter quarters. I had, of course, plenty of sections that were unfinished.

Another thing, while all my neighbors had swarm after swarm from the same old hives, neither of mine swarmed at all. This would not have been unexpected from the May swarm; but the other, an old colony, failed to swarm, although it was a good strong colony. When the buckwheat flow was over I had three supers on each hive.

Brick Church, Pa., Feb. 2.

[If more of our bee-keeping friends would give more attention to bottom ventilation there would be less clustering-out and less of swarming. Our neighbor, Vernon Burt, thinks hives set up on four blocks off the bottom goes a long way toward stopping swarming altogether. It is such a simple trick it is a wonder that more do not try it. —ED.]

CALIFORNIA STATE CONVENTION.

BY MRS. H. G. ACKLIN.

The twentieth annual convention of the California State Bee-keepers' Association was held in the Chamber of Commerce, the 14th, 15th, and 16th of February.

Mr. Scott, the incoming president of the Chamber, welcomed us in a happy little talk. He mentioned that the Chamber would do all it could for the bee-keepers, and in return the association ought to keep a live exhibit (not bees) of honey which had not come out of the ark, in the exhibition rooms of the Chamber of Commerce.

In response, Prof. A. J. Cook said, among many other things, that the fine scenery California bee-keepers always have when in their apiaries should tend to make them good honest men, and he thought they all were. In fact, there can not be many bad people in the midst of such magnificent natural views as we are continually feasting our eyes upon.

California bee-keepers appear to have implicit faith in the National, as our president declared, when urging people to join the association, that the National had never failed to "bust" an ordinance that oppressed a bee-keeper.

During the morning session Prof. Cook took occasion to introduce several eastern people, only three of whose names I now recall—Mr. H. B. Harrington, of Medina, O., Mr. Coggsball, of New York, and Mrs. H. G. Acklin, of St. Paul, Minn., and the convention welcomed us in a body. Mr. Har-

rington was called on to speak, and in the course of his remarks told how Mr. A. I. Root commenced making bee-hives.

There were two evening meetings, at which music, both vocal and instrumental, stereopticon views, and addresses, were the principal features.

Those having papers were: Mr. J. W. Ferree, Newhall; Mr. J. W. George, Imperial; Prof. A. J. Cook, Claremont; Mr. C. M. Richter, Santa Barbara; Mr. J. E. Pleasants, Orange; Mr. Ralph Benton, Berkely; Mr. M. H. Mendleson, Piru; Mr. Joseph Moffat, Los Angeles; Mr. T. O. Andrews, Corona; Mr. G. J. Lynn, San Fernando; Maj. G. F. Merriam, Twin Oaks; Mr. C. A. Wurth, Ventura; Mr. Bishop.

There is a very strong feeling, apparent at all times, in favor of organization and co-operation among California bee-keepers for mutual protection. They claim every other big industry is organized, and why not honey-producing?

There is much uneasiness at present in the southern part of the State concerning conditions around Fresno. Black brood has made its appearance up there with such sweeping and fatal results that every bee-keeper, familiar with the situation, is alarmed. Quarantine resolutions were introduced during the convention.

The former president, B. G. Burdick, of Redlands, was re-elected; also Secretary and Treasurer, A. B. Shaffner, of Los Angeles. The vice-presidents, one from each county, are the presidents of the local societies or clubs. The convention was well attended, and much interest was manifested in most of the subjects discussed.

After adjournment of the State convention the bee-keepers of Los Angeles Co. got together and organized a local society; elected officers, and appointed a committee to wait upon the county board of supervisors in regard to establishing a quarantine against bees being shipped into this county from any section infected with black or foul brood.

Los Angeles, Cal.

SECTIONAL HIVES FOR COMB HONEY.

Criticisms Come from those Who have not Understood the Special Management Required.

BY LEO E. GATELY.

Previous to the adoption of the sectional hive in my apiary several years were spent experimenting with and testing the merits and demerits of the various styles, in an endeavor to determine exactly what style and depth were best adapted to the exclusive production of comb honey. Its adoption, therefore, was not the result of mere chance or prejudice, but rather because it stands preeminently unequaled in flexibility and economy of management.

In a great many (and perhaps most) localities, some form of contraction is a necessary essential in securing satisfactory

work in the supers. With unlimited skill it is impossible to attract the bees into super work so long as there are empty combs below. In this respect all deep hives, if not utter failures, are at least fundamentally bunglesome. To contract the hives by replacing some of the frames with wooden dummies invariably results in poor filling of the outer sections, and in getting them completed with the central ones. Obviously, the only remedy is to contract from the top, without reducing the supering surface. With a hive in which the brood-chamber is horizontally divisible, the mere removal of one or more of the hive divisions or brood-chambers contracts it to the desired capacity.

The divisible hives in most general use are built to hold the common square section, as they were fashioned to fit the Langstroth frame. My present one was built for the modern 4·5 section, and, like one or two others, the super was first considered in planning its general construction. Again, instead of making the brood-chamber deeper than the super, as is usually done, the hive was cheapened and simplified by making each division one and the same thing in every detail.

Owing to the frequent mistake of having applied the identical methods of management to the sectional hive that has been habitually given to single-chamber ones, it is constantly receiving an endless amount of unjust criticism from those who suppose they have given the matter close investigation. The principles contained in the two hives are radically different, and the most valuable features of the sectional hive are manifested only when proper methods of handling are employed.

Years ago practical honey-producers fully demonstrated the feasibility of handling hives instead of frames. It is possible to determine the condition of a colony by elevating one of these hive divisions and looking between the comb surfaces, as well as the apiarist who tediously goes over his hives frame by frame. With proper management one can thoroughly handle nearly twice the number of colonies that he can when single-chamber hives are being used.

The one redeeming feature of a deep hive lies in its excellent wintering qualities. A shallow hive can never be an ideal winter hive. Let it not be forgotten, however, that a sectional hive is not necessarily a shallow one, but may be made at will of any desired depth.

While, generally speaking, it is advisable to have no more than one style of hive in the apiary, this rule can not always be too strictly adhered to. A divisible hive and a deep one that will tier up perfectly is at times even handier than either when used alone. For instance, when colonies build up sufficiently in spring to require additional room, and the flow has not yet been reached, a shallow chamber will usually give just the correct amount of room to discourage swarming. When the flow appears, these

shallow chambers can be replaced with surplus-receptacles, and be used for hiving swarms or making new colonies. Under such circumstances, two styles of hive go well together, but they must be of proper dimensions to tier up perfectly.

Ft. Smith, Ark.

STOCKING A BEE-RANGE.

The Problem of Overstocking; Various Causes of Annual Variations and Marked Changes in the Varieties and Quantity of Honey-producing Flora; is a Range Overstocked When the Surplus per Colony Begins to Decrease? Number of Acres Necessary per Colony.

BY OREL L. HERSHISER.

How many colonies of bees are required to stock a location properly?

The bee-keeper has a general idea as to the value of a bee-range. If there is an abundance of one of more varieties of honey-producing plants within easy bee-flight of the apiary it is esteemed a good location. But the number of colonies required to work a given area to best advantage has rarely been approximately ascertained. While it is a perplexing problem, probably impossible of exact solution because of the varying climatic conditions, yet there seems no doubt that a much nearer approach to a knowledge of the average annual net possibilities of our locations may be had.

It has been observed that, when a location was supposed to be stocked with as many bees as it could profitably support, afterward the number of colonies has been doubled or trebled without producing any noticeable decrease in the yield per colony. It has been the experience of bee-keepers who thought they had their locations stocked to the limit of profitable production, that some other apiarist, wishing to share in the excellent honey crops of the locality, has moved upon the same territory, sometimes undoubtedly resulting in some decrease in the yield per colony, but often without producing any noticeable difference. On the other hand, it has been noticed that, where the number of colonies in some fairly large apiaries has been greatly decreased there has been no apparent increase in the yield per colony.

The value of a location is not to be determined by a single season's honey crop, and very often not for three or more successive seasons, but from its average annual possibilities as ascertained by observations for a period sufficiently long to give us confidence as to what we may expect. A location may be capable of producing abnormally large crops, but they may occur so infrequently, and be followed by so many seasons of failure, as to make it of no value to the specialist. A location productive of plants that annually yield nectar in abundance is valuable in proportion to the acreage or amount of the flora; and if so limited as to supply a good crop to but few colonies it would be of no value as a field for extensive operations.

There are many kinds of good locations; but all may be classified under two general heads—one wherein a single variety of dependable nectar-yielding plants is abundant over a large area, and which has a long period of blooming, such as clover, basswood, wild red raspberry, buckwheat, alfalfa, sage, etc., or where two or more dependable nectar-yielding plants that bloom at the same time are abundant; the other, where several varieties of dependable nectar-yielding plants that bloom in succession or at different periods of the season are abundant over a large area. Supposing the total amount of flora in the first-mentioned kind of location to be the same as the total from all sources in the latter, the former is capable of profitably supporting the greater number of colonies, for the reason that the honey-flow, while shorter, would be nearly as profitably worked per colony by the greater as by the smaller number of colonies that would properly stock the latter. In the latter kind of location the smaller number of colonies that could be profitably kept would be compensated for by the greater yield per colony, owing to the prolonged honey-producing season.

Since it would be unprofitable to keep enough bees in a location to gather all the nectar as we would harvest a crop of potatoes, corn, or wheat, where we secure practically all that has matured on a given area, we must do the next best thing if we would get the most out of the apicultural pursuit and keep in the apiary the number of colonies, as nearly as we can determine, that will produce the greatest amount of honey at the maximum net profit.

A location is not stocked to yield the greatest net profit if we stop increase at the point where there is the first perceptible decrease in the amount of honey per colony. The number should be increased as the yield per colony decreases until the point is reached, as nearly as may be determined, where the apiary can be operated at the greatest net profit. Thus will the greatest possible amount of God's bounty to the apiarist be made available for the use of humanity.

Suppose A has found by experience that 300 colonies will produce an average annual crop of 60 lbs. per colony or a total of 18,000 lbs.; and suppose B, three miles from A, with 100 colonies on an exactly similar location as to honey-producing possibilities, obtains an average annual crop of 80 lbs. per colony, or a total of 8,000 lbs. It is obvious that the difference of 10,000 lbs., in A's favor, the skill of the operators being equal, is due to his having stocked his location more nearly to the limits of profitable production.

The reasonably frequent occurrence of first-class crops of honey indicates a good location, even if there are a good many seasons of failure. As a case in point, I have in mind a bee-keeper of California having several apiaries in a certain locality, and in a good season the yield is in excess of 100 lbs. per colony. In 1901 there was a first-class crop; in 1902 there was a failure to the

extent that the apiarist expressed himself as being able to "carry his crop under his arm." In 1903 there was a full crop of 100,000 lbs. Within ten to twelve miles of this location there were thought to be 10,000 colonies of bees, as I remember the statement of my informant, which shows the estimation in which the locality was held, notwithstanding some seasons of total failure of surplus.

In 1905 I had 100 colonies in a certain location, and within 80 rods were at least 50 other colonies. Alsike, white, and sweet clover were abundant and luxuriant, and my crop was 100 lbs. per colony, with an increase of 75 per cent. Residing about three-fourths of a mile from the apiary I had good opportunity to observe; and as I had the only considerable number of Italians within several miles, my bees were easily identified. I saw very few of them more than one mile from the apiary, although during the honey-flow they flew from and to the hives in great numbers. The apiary was located in the city where considerable of the area is occupied by streets, buildings, gardens, railroads, and numerous barren stone-quarries. An estimate that one-sixth of the area was covered with an abundant growth of honey-producing forage would be approximately correct; and if the bees flew in all directions the same as they did where I made observations, which was a wide expanse of clover, I am of the opinion that, during the honey-flow, not more than five per cent of them flew more than a mile from their hives, and those not greatly in excess of that distance. The area of a circle one mile in radius is 2010.6 acres; and, if my estimates are not at fault, 95 per cent of my bees gathered their part of the honey from about 335 acres of flora, or about $2\frac{1}{4}$ acres to each of the 150 colonies on the range. As the area of a circle increases rapidly as the radius increases it will be seen that, by a flight of a few additional rods from the apiary in all directions, a greatly increased area may be reached. Thus while the area of a circle having a radius of one mile is 2010.6 acres, that of a circle having a radius $1\frac{1}{2}$ miles is 4523.9 acres, or an area $2\frac{1}{4}$ times that of the circle with a one-mile radius. The bees, by a flight of half a mile beyond the one-mile radius in every direction, would reach 2513.3 additional acres. It seems quite reasonable to believe that bees can work profitably to a distance of at least $1\frac{1}{2}$ miles; and as my bees and those of my neighbors did not seem to stock fully the location to a radius of one mile, $2\frac{1}{4}$ times the number or 338 colonies would not have crowded the location; and I firmly believe the number of colonies that could have been worked at greatest profit there that season would have been in excess of 500, or at least one colony to each $1\frac{1}{2}$ acres of flora. The honey crop at this location for the four preceding seasons was above the average with nearly the same number of colonies. That of the season of 1906 was a failure with the same number; but it is my opinion that, with 10 colo-

nies, the failure would have been nearly as marked.

For the purpose of an analogous comparison, suppose a number of berry-fruit farms aggregating 750 acres, all situated within a circular area three miles in diameter. Suppose an abundant crop of berries. It is evident that with such a crop, and so many acres of bushes, 100 pickers would each be able to gather the maximum number of quarts per day, because it would be impossible for a picker to go carefully over anywhere near $7\frac{1}{2}$ acres, the proportionate area of each, as fast as the fruit ripens. With a stint of $1\frac{1}{2}$ acres each, assuming that 500 pickers is the approximate number required to gather the fruit with greatest profit to the growers in the average season, it is evident that each could still gather the maximum amount when there is an abundant crop. Assuming two acres to be all a picker could possibly attend to in a season of less than the average crop, when no picker could possibly gather anywhere near the maximum, no matter how much area was allotted to him, very little advantage to the individual picker would accrue by the employment of a less number than is required in the average season. This is evident from the fact that, when the fruit is thinly distributed, and of small size, the picker's time is largely taken up in searching over a large area to gather a given quantity.

Let us now assume that 750 acres of this circular area is a first-class alsike-clover or other good honey-producing range, and that a bee-keeper resides in the center so his bees can reach every part of it with a flight of not more than $1\frac{1}{2}$ miles. Assuming that $1\frac{1}{2}$ acres of flora per colony is the area that will yield the greatest profit in the average season, from analogy it is clear that neither 100 nor 500 colonies would overstock it, and much less would they do so in a season of bountiful crop. On the other hand, in a season of failure of surplus there would be only a slight overstocking, wherein the small loss would be insignificant as compared with the great gains of the average and bountiful crops. In the medium season the larger number would prosper nearly as well as the smaller, because $1\frac{1}{2}$ acres of thickly growing honey-producing flora would undoubtedly be as much as the average colony could work; and when it comes to nearly a failure of nectar secretion, the larger number would show only a slight falling-off, for the reason that the time of the bees is nearly all consumed in flying from flower to flower in the almost fruitless search. This statement is impressive when we remember that apparently, in the season of 1909, we had the most luxuriant and abundant basswood bloom we ever saw that certainly promised a bumper crop, but there was never a smell of basswood honey in the hives.

Further confirmation of the proposition that, in a season of scarcity of nectar secretion, a few colonies in a normally good location will do very little better per colony than the number that would properly stock

it in a good season, is found in the fact that in a poor season the bee-keeper with a few colonies is found to have a "short crop," and is "obliged to feed," just as is the apiarist who operates on an extensive scale.

It is well to bear in mind that annual variations and permanent changes in the amount, area, and varieties of honey-producing flora have occurred and will continue to occur in nearly every locality. These variations and changes are traceable to two prime causes; viz., to the absence of uniformity in those conditions that go to make up the climate, such as heat, humidity, precipitation, winds, clouds, and electrical conditions; and, second, to the hand of man; i. e., to the operations of the lumberman and husbandman in the destruction or production, as the case may be, of honey-producing flora.

Kenmore, N. Y.

To be continued.

GIVING INDOOR FLIGHTS TO BEES DURING THE WINTER.

BY G. T. WHITTEN.

On Dec. 16 I transferred a strong colony from a ten-frame hive into an eight-frame glass hive, the change being made out of doors, the temperature 34° . The bees were all in the new hive in about 20 minutes, when they were taken inside and placed in a south window in a cold room, and given a flying-cage two feet square, the hive entering the cage at the back, with an entrance out of doors through the cage.

Feb. 19 they were moved into a warm room and given a flying-cage the same as before. The temperature of the room was from 60 to 70° .

March 4 the hive was placed on top of a new circular hive. The bottom-board was removed to give the bees a free passage down through the lower hive and out into the cage.

March 12 the bees with the queen were all smoked down into the lower hive, and the top hive removed. They were then given a frame of honey from the original hive, this being placed in the cage. They at once made themselves at home and began building comb, filling it with honey from the frame. This hive is made on the plan of a half-circle, with glass on all sides.

The frames are of standard size, and are placed long side up, and so arranged that they can be turned around in such a way that each frame stands at right angles to the next one, thus giving an opportunity to see every movement of the bees on the frames. The frames contained only foundation of different dimensions, from none to full sheets. They are now, March 23, working on six frames, and have them well filled.

The second day they prepared a brood-nest, and the queen commenced to lay, and continues to do so. The frames are opened from once to many times each day for inspection. This does not appear to disturb

the bees in their work. They are looked over each night, a careful examination is made, and a record is kept of the changes during the day.

The bees are hybrid, very black. When outside they were very cross; but since being inside they have become gentle, and can be handled almost as safely as flies. They appear to enjoy being on exhibition.

The hive, with the brood and stores from which the bees were transferred, was taken to another room, and given to a single-frame colony that has been kept in a warm room since June 14, 1908. The frames were spread apart, and the frame with its bees and brood placed in the center of the brood-nest. The changes have been very successful.

Hartford, Conn., School of Horticulture.

A NEW HONEY-STRAINER.

A Combination of Two Vertical Straining Surfaces which will Handle the Honey as Fast as it Runs from the Extractor.

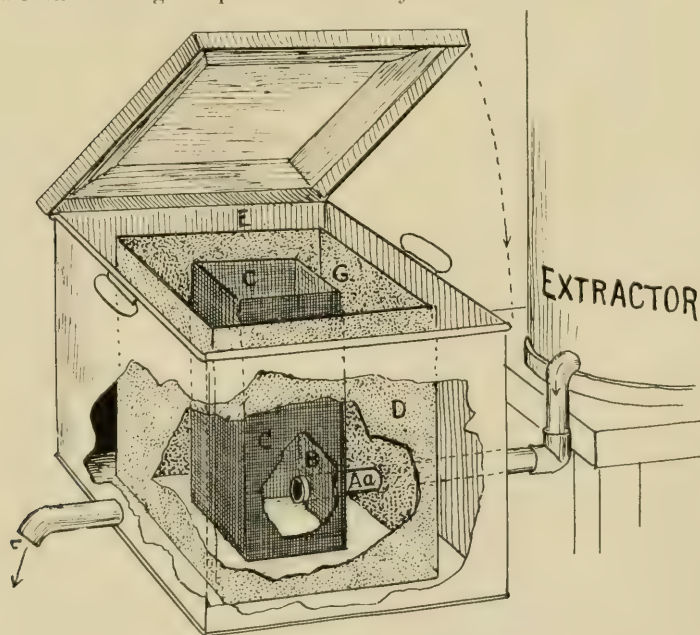
BY R. F. HOLTERMANN.

Some years ago I described a strainer which I had been using for some time—one which was built in the extractor. This acted automatically, the honey flowing through it as fast as extracted, before it had a chance to cool. During the process the honey was

bles which produce the froth and seum, on which there is so much debate. Such troubles have been practically unknown to me since adopting this method of straining my honey.

Since the publication of my first plan, p. 146, Feb. 1, 1906, others in the United States, and even in Europe, have used it. The great drawback preventing its general adoption, however, was the fact that the strainer was attached to the inside of the extractor, and could not well be attached to an extractor already in use, as a special construction was required. To overcome this objection I have devised a new form of strainer, retaining all the principles of the previous machine, with the addition of a second strainer; that is, there are now two strainers—a coarse one and a fine one, the coarser one relieving the finer from clogging. The pressure and straining surface are increased in proportion to the depth of the honey in the extractor.

As shown in the illustration, the honey, after being thrown from the combs, strikes the side of the extractor and runs down to the honey level in the extractor below the reel. From there it flows out through the gate or through a special opening into the strainer-tube, which is connected with the strainer by means of a rubber hose. The honey then, by means of a 2½-inch-square tube, Aa, flows into the central compartment of the strainer B. Here, partly by means of



HOLTERMANN'S NEW STRAINER.

gravitation, as in the former construction, and also by means of the wire cloth, twelve meshes to the inch (strainer C), the coarser particles are separated from the honey, which, in its outward course, then reaches the finer strainer, D, which is cloth supported by coarse wire cloth, like that used for the comb-pockets of extractors. Through this cloth it flows into the outside space, E, and from thence through the opening F, into the barrel or other container.

The cloth strainer, D, has a capacity of 1700 square inches. Most of the larger particles in the honey, owing to gravitation, never touch the cloth, because they are retained in the

not lowered below the honey-gate of the extractor, and it did not need to be lifted up later by main strength. The honey flowed in an unbroken lateral flow, so there was not the objectionable admixture of air-bub-

central compartment; and the bulk of those remaining rise to the surface of the honey and find their resting-place, not on the side of the cloth, but on the bottom of the can. Let me say, however, that, unless

the honey is passed through the strainer at a much slower rate than is practical, I would not consider it safe to depend upon gravitation alone, for even water will carry along its coarse particles which, by the law of gravitation alone, should sink to the bottom or rise to the top; and a thick substance like honey has a much greater tendency to carry with it such particles.

The coarse wire strainer has four sides, 9 inches in width by 24 inches high. This is as coarse as will answer the purpose. The cheese-cloth strainer also has four sides 18 inches in width by 24 inches high. If the space under the baskets of an extractor is of a less depth than the straining-can, the entire surface of the strainer can be secured by lowering the bottom of the strainer below the bottom of the extractor.

If the weather is cold, or if the honey has been allowed to cool in the combs, the rapidity of the straining can be hastened by means of an oil-stove underneath; but the above system strains the honey under the best possible conditions without artificial heat, and I have rarely found the heat necessary.

The strainers can be removed from the can, as they are secured to the bottom by means of corner posts and cotter pins. The cheese-cloth is passed under the wire-cloth form upon which it is stretched. There is a valve by means of which the openings A and F can be closed at will. The valves are constructed in a manner similar to ordinary screw-cap honey-gates, and are operated by means of handles extending up to the top of the can.

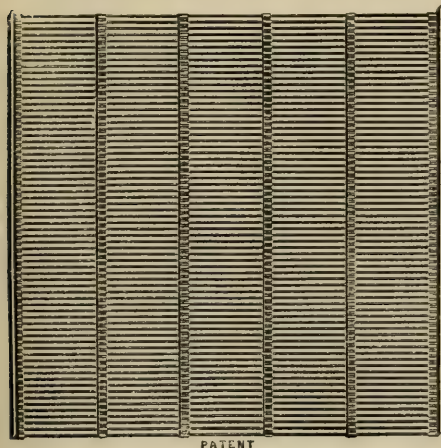
Brantford, Ontario, Canada.

WIRE QUEEN-EXCLUDERS IN ENGLAND.

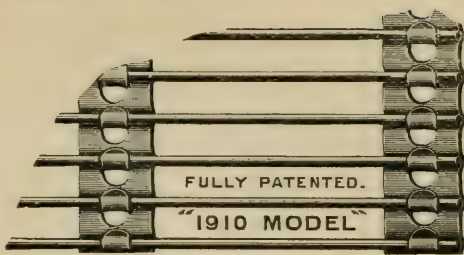
BY JOSEPH TINSLEY.

I am sending particulars of some novel inventions by a bee-keeper in this part of the country—a particular friend of mine, Mr. Arthur H. Wilkes. I will first mention

THE FREE-WAY QUEEN-EXCLUDER.



PATENT



This excellent appliance is made from special hard-drawn round wire that *will not rust*, and is much in advance of the zinc one. The inventor claims the following points; and from my own personal experience I can endorse his opinions:

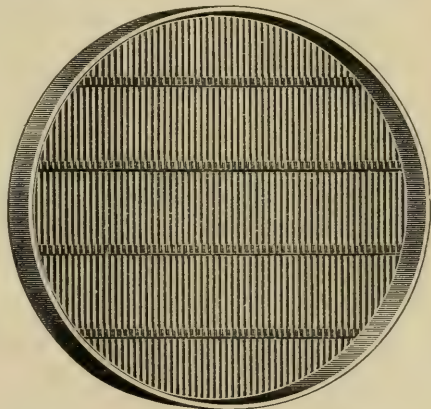
Twelve hundred bees can pass through at one time in a ten-frame hive, $\frac{3}{8}$ -inch top-bars, as against 800 with the zinc excluder.

It presents a smooth rounded surface to the bee, instead of a knife-edge.

It will not buckle, and there are no flat surfaces to be sealed down.

The five ribbed strips, $\frac{1}{8}$ in. wide, rest on the top-bars of the frames, from end to end.

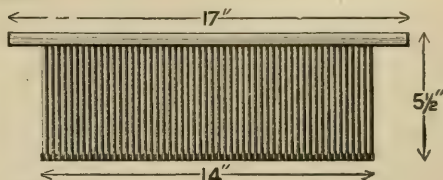
The bees pass through with scarcely any hindrance at all, which is invaluable to queen-excluders. It checks swarming to a great extent.



PATENT

QUEEN AND DRONE RIDDLES.

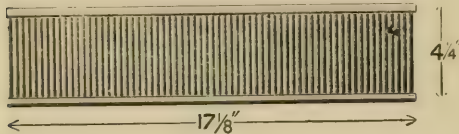
These are very useful in driving or shaking bees from their combs. They can be put to many useful purposes in the apiary. It allows workers to pass through, leaving the queen and drones to be disposed of as desired.



PATENT

FRAME-DIVIDER.

A simple appliance for insuring heavy frames of honey having flat and even surfaces either side. Bee-keepers know the time saved in uncapping honey when the combs are built evenly. By using this appliance the work is performed in half the time, and reduces waste to a minimum, as the cappings may then be shaved off in one complete piece. Frames of honey built by the aid of this ingenious appliance present a most attractive and splendid appearance for exhibition at shows or shop windows.



PATENT

WIRE SECTION-SEPARATOR.

The great point in favor of this class of separator is that it allows the bees plenty of space to work, and gives free access to the sections. Being non-rusting it will last for years.

Stone, Staffs., England, Jan. 20.

[This is certainly a novel way of constructing wire queen-excluders; but in our opinion the plan is defective in one respect. For instance, in the sample sent us the wires are held only approximately the same distance apart, the spaces varying from about 164 thousandths to more than 175 thousandths. A good many queens would certainly get through a space as wide as the last mentioned. Wire excluders as made in this country vary scarcely 2 thousandths of an inch — 163 thousandths being the standard.]

The trouble with this method of making wire excluders will be understood by referring to illustration at the top of the right-hand column on the previous page. The spurs punched out of the solid metal, when folded over the bars of wires, are not folded over alike, making the spacing unequal. This may be due to different temper or thickness of the metal, or to defect in the dies. In the second place, the wires are altogether too small in gauge. They should be much heavier. The same principle, patented in this country, is much better, because the wires are made of thicker gauge, and held apart by molten metal poured around them at certain intervals.—ED.]

HOW TO FEED ARTIFICIAL POLLEN WITHOUT EXCITING THE BEES.

BY JOSEPH GRAY.

F. Dundas Todd, p. 122, Feb. 15, touches a subject of intense interest. It involves a far wider question than pollen feeding, which, to me, is one of the simplest matters of apiculture, and I was somewhat surprised to see his failure in hunting up the matter.

A close observer will not be long in discovering that the bees store their pollen in the comb next to the brood, and it is a big mistake to remove such combs in spring-time; if, then, our colony is short of pollen this is the place to give it; and so simple is the method that I thought it was a well-understood detail of bee-life. What I do is to take out the comb next the brood, dredge it well with meal, not fine flour, and replace it. By this method the bees are not unnecessarily excited, which is the one thing to avoid in unsuitable weather.

We all know the brood-nest advances slowly at first, and, if a queen is short of bees, to cover her work she will cross and recross, laying as many as five and six eggs in the same cell rather than go outside the cluster of bees. Old combs add to the warmth of the brood-nest, and usually contain pollen store, and are, therefore, of great value in the early spring.

The real reason so little is said on pollen feeding is that a district short of early pollen is the exception, not the rule. You can not force nature so early; wait till the crocus and willow are in bloom; and after the brood-nests are well going you can force on the strongest first, and make them feeders for the weak ones.

WHY CAN WE NOT FORCE EARLY?

Flight in unsuitable weather brings disaster to our little aviators; a chilling blast, a broken wing, means death to the busy worker; so the using of pollen, which means a larger amount of faeces to void on the wing and the bringing-in of water to prepare the milk food for the brood progresses only with the progress of the outside conditions; as these advance in warmth and sunlight, so the brood-nest advances; and as it advances, then and not till then can we force the pace. It is not profitable before, for the loss in bee life is not compensated for by the amount of brood raised. Never use a method of giving early pollen by which the bees are compelled to take it, because if they use more pollen they must fly more to rid themselves of the extra faeces.

Brood-nests advance in spring in proportion to the number of bees composing the stock. A weak stock may be headed by an extra fine queen, but not enough bees to cover her work. I have counted in one case cell after cell with ten eggs in each cell, and in some cases two larvæ in a cell. Keep such stock until you have built the strong stocks; then on a *flying day carry sealed brood and nurse bees*, and strengthen and equalize the apiary.

Never give brood alone to a weak stock; if it could have cared for more brood the queen would have seen to that. Far wiser is it to take one comb of brood and nurse-bees to a weak stock than two combs of brood which are liable to get chilled instead of strengthening the stock.

Dumbarton Road, Glasgow.

[See answer to D. M. Macdonald on page 271.—ED.]

Heads of Grain

from Different Fields

WHITE CLOVER CAUSING BLOAT IN CATTLE. MOSQUITOES LARGELY TO BLAME; SALT PORK RELIEVES BLOATING.

I seed a fresh pasture each year. I have sowed for pasture a mixture of timothy and mammoth red clover; timothy and red clover; timothy and a mixture of red and alsike clover. The past year, my pasture being of timothy, alsike, and red clover mixed, the alsike seemed to occupy the ground entirely, and the bloom period lasted for a long time. The pasture looked beautiful, like large pink snowbanks. The milk supply was larger than when I pastured on either of the other clovers; but I was troubled much more with bloat than during the previous seasons, when I pastured on mammoth red and common red clover. Of course, the alsike was of a much heavier nature. This is how I account for the larger milk supply, and also more bloat. I think the large stems of the mammoth helped to a great extent to prevent bloat. Likewise, if white clover makes sufficient growth it will produce bloat.

Clover, at least with me, is not the only cause of trouble. Cows will not bloat if allowed to fill themselves with other grasses before going on the clover. Then, even though they are kept there, there will be no trouble unless in some way they are prevented from eating. This is where my trouble lies: The mosquitoes, at times, when the weather is wet, are very bad. The cows are hungry in the morning, after a long night's fight; and when the sun rises the mosquitoes quit their work, and the cows go to eating voraciously; and then it is not long before I have a case of bloat. I have never lost a case so far. I get a chunk of salt fat pork and shove it down into the mouth of the cow as far as possible, and at the same time hold up the cow's head by putting my other arm up over the neck and down under her jaw. I lift up to prevent her dropping the fat pork. She will chew for a while, and soon swallow. This will relieve the case at once.

I wrote to the Minnesota Experiment Station, asking if they knew of any thing I could spray my cows with to prevent the mosquitoes from tormenting them; but in reply they said they knew of nothing but kerosene. I did not place much confidence in that. I think that, if we had something in the form of grease, or something to spray the cows with, our bloat trouble would almost be at an end.

Medford, Minn., March 7. J. F. BRADY, JR.

A JACK-KNIFE OPERATION TO RELIEVE BLOATING.

I have raised considerable alsike, both for hay and pasture. I always let cattle out both night and day so as to prevent them from getting too hungry. I have had bloat but once, and the circumstances were these: A wet spring caused a very rank growth of alsike; and one hot morning about the first of June, when the alsike was five or six inches high, the cows, for some reason, stayed in the yard until about 9 o'clock, and, I think, drank quite heartily just before going out. In about an hour they came in again. Two were bloated—one old cow very badly, and a young one not so much. An old man had told me once to put a large wooden bit in the animal's mouth, and the efforts to dislodge the bit would enable the gas to escape. I tried that first on the old cow, but it did no good, and in the few minutes I was working with her she was rapidly getting worse. I had no trocar and cannula; but I thought she would die if I left her alone long; so I pulled out my jack-knife with a sharp-pointed blade about $\frac{3}{8}$ inch wide, and, holding the blade very firmly between the thumb and first finger, letting it project about an inch, I jammed it through the hide up to my fingers, on the left side, half way between the hip bone and the first rib. I found it necessary to put something in the way of a tube in the hole, as it will close when the animal moves, as the inner linings will move over the hole in the skin. So I put in a piece of quill from a large feather, and in a short time the old cow was almost as well as ever. I noticed, however, she showed the effects for a week or ten days, after which she was

all right, and I owned her and pastured her in the same field for several years.

While I was operating on the old cow, the young one that was not bloated so much began to go down, and recovered without any treatment.

I regard alsike as a much superior feed to white clover, and I should not worry over the bloating, with this precaution: Never let cattle get very hungry and then fill up on a rank growth of succulent feed like alsike, and especially if it is wet with dew or rain. As Mr. Goddard says, "When cattle eat heavily of any succulent crop they are subject to bloat."

Dunlap, Ia.

E. S. MILES.

WHITE CLOVER CAUSES BLOATING WHEN IT GROWS VERY RANK.

About 1878 to 1886 it was a common thing for the cows to become bloated on white clover in and around Wyandot, Kansas, where I then lived—that is, the cows that were turned loose on the commons in our little town. Many cows died from it. The clover was very rank, some years being nearly knee-high in many places. When the dew was very heavy I used to keep my cows up in the morning until the clover was dried off. I have put a gag in the mouths of two or three cows until they would belch the gas out.

Escondido, Cal., Feb. 24.

J. A. NELSON.

FEED HAY BEFORE TURNING ON TO CLOVER.

I think the cases of bloating from alsike or white clover are very scarce, but from red clover, very frequent. Bloating might take place from the small clovers if there were a large growth, and hungry cattle turned on when the clover is wet or frosted. The best way to avoid bloating is to turn cattle on when the grass is dry, or for only a short time, say two hours; then drive them off for the day. In all cases of that kind it is better to give cattle a good feed of hay; then when the grass is dry they will not overload their stomachs.

Easton, Md., March 10.

J. AIKENHEAD.

ANY CLOVER MAY BLOAT CATTLE.

All clover will bloat cattle when they are turned out on it before the dew dries off. I have never lost any stock from that cause, but I have had some swell up until they were ready to burst. My remedy is a teacupful of epsom salts and a tablespoonful of ginger put into a bottle afterward filled with water. Shake well and drench, and watch the cow chew, as if chewing the cud. When she is done she will be the poorest-looking skeleton you have seen for some time. Where the flesh goes to I can not tell.

Marshallton, Pa., Feb. 22.

W. W. WEBSTER.

A SHORT PIECE OF GAS-PIPE INSERTED AS A BIT AL- LWS THE GAS TO ESCAPE.

White clover does cause bloat. We have had experience with that and red-clover bloat. In 1908 white clover was abundant, and we had considerable trouble. To cure bloat, take a short piece of gas-pipe and drill a few holes through it and place it crosswise in the animal's mouth like a bridle-bit, and, nine times out of ten, the animal will soon be relieved. For those who have no gas-pipe, a hollow stick of wood about the size of a broom-handle, with holes bored through, and fastened in the animal's mouth, will do. This allows the gas to escape out through the tube, and prevents the animal from swallowing it again.

Blue Mound, Ill., Feb. 21.

M. C. MORGAN.

DISTANCE BEES FLY FOR NECTAR.

In this locality my experience says most emphatically that the great bulk of the honey is gathered within one mile of the hive. In one small yard of 25 colonies, only two miles away, the bees during the past summer gathered quite a little surplus at a time when those at the home yard were doing nothing, and they brought in a different kind of honey from any ever gathered at home. Then at the time of heartsease bloom they did not gather as much as the home bees, although they were apparently near more heartsease than those at the home yard. Then, again, a yard three miles from home, and within half a mile from large fields of heartsease, stored several times as much per colony as the home yard, which was from $\frac{1}{4}$ to $\frac{1}{2}$ to the same fields. The home bees nearly all flew in the direc-

tion of this heartsease, which was along an overflowed creek-bottom; but they did not seem to get much. Another thing I noticed, the bees that were near the heartsease-field bred stronger in the fall, and were much stronger in bees than those that were further away. It seemed as though the latter knew their forage was far away and hard to get, and they filled up the brood-chamber heavier than the others, and that, of course, cut down the surplus somewhat. The country they have to go over is not very rough—just one large hill, then a straight shoot of about a mile to the bottoms.

Dunlap, Ia.

E. S. MILES.

TWO RECIPES FOR USING HONEY.

For honey candy take one cupful of butter, two of granulated sugar, two of honey. Select a deep preserving-kettle and put in the butter, first rubbing it well over the bottom of the kettle; then add the honey and sugar. Let it boil fast for ten minutes. Ascertain if it is done, in the following way: Have ready a cup of cold water, and drop a little into it from the point of a knife. If it is sufficiently done when you take it from the water it will be crisp. Now prepare a large shallow tin or pan; rub over with butter to prevent its adhering; pour from the kettle to get cold. To keep good it should be excluded from the air.

BROWN BREAD.

Three cups of graham flour; $\frac{3}{4}$ cup of honey; 1 pint sour or sweet milk; $\frac{1}{2}$ cup raisins; 1 teaspoonful each of soda and salt. Grease three 1-lb. baking-powder cans and fill with the mixture.

Tempe, Ariz.

W. W. APLEYBY.

[We have tried both of the above recipes and can vouch for their excellence, the brown bread being especially good. The candy is like the old-fashioned "butter-scotch," but better.

Honey is not used as much as it should be in cooking. It is not as cheap as some of the inferior "corn syrup, but it is not in the glucose class. Honey is sweet, and the so-called corn syrups are but slightly so except for the addition of the 10 per cent of cane flavor. The 90 per cent (glucose) is about half as sweet as sugar.

Dr. Miller and others have given some very good recipes using honey, but there ought to be many more. Our columns are open. Let those who know of good recipes using honey send them in to us. We shall be glad to use them for the benefit of all.—ED.]

WHAT IS THE LIFE OF A WORKER?

I have just read Dr. Miller's Straw and your comment in regard to the length of the life of a worker-bee, in which the doctor figures, and you agree with him, that the average life under normal conditions is 6 weeks or 42 days. How this piece of foolishness ever got into bee literature is more than I can comprehend. Not only is the average of the bee's life not 42 days; but the very limit of bee life under normal conditions does not exceed 27 days.

Some years ago I lost heavily in winter, so the next spring I sent to Florida and bought 50 queens. As these were very yellow, and as I used hybrids to form my nuclei, it was easy to see when the new bees began to hatch out, and to see when the last of the old bees were gone. Now for the results: As these nuclei all contained freshly laid eggs it was just 21 days when the last hybrid bees were hatched out. In 27 days more, not one of the hybrid bees was left in the 50 nuclei. Now, if every hybrid bee was gone in 27 days after it hatched, how can you make out the average life of the worker 42 days? I think it is time this inexcusable blunder in bee literature was corrected.

I have been with the bees for forty years; and my observation is that, when the bee begins work in the field, its days are numbered. Of course, bees thrown out of normal condition will live for several months. You may figure from the time the egg is laid; but even then the limit of bee life would be 48 days; but you can not do this fairly, any more than you can figure the life of a chicken from the time the egg was laid, or your own life from the time you were conceived.

Good Bottom, Pa., March 8.

G. A. WRIGHT.

[A good deal depends on what you mean by "normal conditions" and "average life" when we figure on the number of days that bees will live. Then we must also take into consideration the strain of bees and the source of nectar. "Normal conditions" we would consider to mean the entire season

—beginning, say, the first of May, and ending along in September or October. A heavy honey-flow, especially from some sources of supply, would mean an abnormal condition. When we speak of the "average life" of the bee we may refer to the life during the honey-flow, but generally mean length of days through the entire season.

You are basing your observations on one season's experimenting. In drawing conclusions, one experiment could hardly be considered as conclusive. You say nothing about the kind of honey-flow that was on at the time, nor do you say whether the nuclei in question contained the proper proportions of nurse bees and fielders.

Years ago, when we were Italianizing our apiary, we had an excellent opportunity for observation. We found that, during the height of the honey-flow, the life of the average worker was from four to six weeks—that is, the ordinary black bee. When we Italianized after the honey-flow there were black bees in the hive—large numbers of them—throughout the entire late summer and fall. In some instances the black fellows showed up all winter, but these were exceedingly rare. We remember that the results we secured were quite in line with reported observations of some of the eminent investigators of years ago. On the other hand, we have had reports of where the workers lived only two or three weeks. In that case the bees had to work on sources of nectar supply where it was very difficult to get the coveted portion of nectar. Some flowers are of such construction that the bees have to do a great amount of crowding and straining to get down to where the nectar is. In that case the wear on the wings is excessive. The life of the bee depends very largely on the wings. If the wings are worn or frayed out, the whole bee will be out of commission. We have almost a parallel case in the horse. He will be able to do good service so long as his teeth hold out; but when they fail him, so he can not masticate his food properly, he is soon good for nothing. We shall be glad to hear from others on the question.—ED.]

PUTTING FRESH BEES ON COMBS ON WHICH OTHER BEES HAVE DIED.

A lot of my bees died this winter and I have a lot of old combs filled with bad honey which is candied or granulated. I have no extractor. Would you tell me how to get it out of the comb? Can I feed the honey back to the bees when they are raising young bees, as the honey is soured and the comb is moldy?

Tidal, Pa.

JOHN A. WOLFE.

[There is no trouble about putting bees on to combs from which other bees have died, providing the stores have not soured. If they are sweet, even though candied, the bees will use them providing they can get access to water. If the honey is actually soured, there is not much you can do with it except to soak the combs in warm water, extract the candied honey partially soured, then work it over into honey vinegar. If the combs are undesirable in other respects we would advise putting them through a wax-extractor. The melted wax will be on top of the soured honey. When the wax cools, the honey can be drawn off and thinned down with water and made over into honey vinegar.—ED.]

CAN THE PRODUCTION OF WAX BE MADE PROFITABLE? THE SIMPLEST AND EASIEST WAY TO INTRODUCE.

1. How would you manage a large colony during a season to secure the largest production of wax from it, instead of honey or increase?

2. What do you consider the safest way to introduce one dozen queens to hybrid colonies into apple bloom?

(Crawfordsville, Ind., March 12.

W. H. KERR.

[1. Wax production can not be made profitable in any except tropical countries. Certainly it could not be made to pay in Indiana or any of our Northern States. Even in Cuba, with its long honey-flows, Mr. C. F. Hochstein, a resident of the island, and one who has tested the proposition, says that honey at even one cent a pound is more profitable than wax at 30 cents. On the other hand, wax production on some of the Hawaiian Islands is fairly profitable; but the conditions there are much more favorable than in Cuba or in any of our Southern States. In Hawaii, combs are built from mere starters. The honey is extracted, and the combs

melted up in a special steam and hot-water wax-machine. It is possibly true that a large-sized solar wax-extractor might be employed for this business to advantage; but if we are correct they are not used in Hawaii.

2. We know of no better way for the average person to introduce a queen than to use some good introducing-cage so constructed that the bees can release her automatically by eating out a plug of candy. There are other methods that are good; but this we consider the simplest and quickest to apply.—ED.]

WHY IS THE PARENT COLONY LAZY?

We all know that, when a colony swarms, the old queen leaves the old hive, where a new queen hatches, with the larger portion of the worker bees; then a period of depression reigns in the old hive for quite a long time in some cases, and with the frequent result that the new stand in the old hive does not gather very much, if any, more than they are apt to need for winter stores. It appears to take them the rest of the season to recuperate from the effects of the leaving of the old bees. Now, may we not counteract this condition, and cause the parent colony and young bees to store nearly if not altogether as much as the old bees with the old queen, although the old bees and queen store sufficient for themselves and our money-making surplus so much talked of. How is it that a new queen and new bees, with hundreds hatching every minute, can not do nearly as well as the old and almost worn-out colony? Is it possible that the very act of swarming so depletes the vitality of the colony as to necessitate the rest of the season to recover from the effects of the same?

Chadron, Neb., Feb. 8.

LEE CARD.

[There are two or three reasons why the parent colony does not equal the performance of the swarm itself. First, by the time the young hatching bees are old enough to gather honey the honey season in most localities is over. Second, the parent colony has given all its working force and many of its young bees to the swarm; and even if all brood of the parent colony had hatched, and the bees from this brood were old enough to go to the fields, its force would be light in comparison with the force in the swarm. There may be a virgin in the hive at the time the swarm is cast, and there may be only ripe cells. At best there will not be a *laying* queen for a week. There will be, therefore, a gap of seven or eight days in brood-rearing, while brood-rearing will commence in one or two days in the swarm. The latter, from every point of view, has all the advantage.—ED.]

ANOTHER CASE WHERE PART OF A LOT OF HONEY SOURD.

On p. 74, Dec. 1, mention is made of part of some honey that soured while the rest did not. I had the same experience, only my honey was three years old before it showed any signs of souring. Out of ten cases there were only four that did not sour. It was old honey that I had taken out in the spring to give the bees room. It was strained into a 1500-lb. tank, and then drawn off into 60-lb. cans. It stood in my shop, where it was good and dry; so last spring I thought I would ship it and get something out of it, as it was very dark, and what we call far-weed honey. It was very strong. When I opened the cans of honey they spewed right out; others were all right. I tasted it, but it did not taste sour. I could not think what was the matter with it, so I sent it to San Francisco. The commission man kept it about eight months, and then wrote me he could not sell it; so I paid the freight both ways, and am going to feed it to my bees. Do you think it will hurt them?

Arroyo Grande, Cal., Dec. 1.

M. D. PRICE.

[We would not advise feeding any soured honey to bees under any conditions. Soured honey is good for nothing except to make into vinegar. If the honey is only very slightly sour, bring it to the boiling-point to prevent further fermentation, and give it to bees in spring or summer for brood-rearing. We would not give it in the fall.—ED.]

FEEDING POLLEN INSIDE THE HIVE IN SCOTLAND.

I was interested in your reminiscences of the days of auld lang syne in your reply to Mr. F. Dundas Todd, p. 123, Feb. 15, on the question of feeding pollen in hives. We practice three separate plans in

this country, although, as a rule, the pollen supply comes early enough to set the bees breeding. The large majority of British bee-keepers are engaged in the pursuit on only a small scale—indeed, with most it is more of an avocation than a vocation; hence, as with most hobbies, it takes up an undue proportion of their time; and as soon as spring appears they must be stimulating. To meet the want, several of our appliance dealers list a special feeder, with an apartment for pollen as well as one for syrup. The bees can, therefore, get a supply of nitrogenous as well as non-nitrogenous food inside the hive in early spring. Then they advertise candy cakes, of one or several pounds, made from sugar or sugar and honey. Into this preparation, before it sets, they stir a quantity of common flour, rye meal, or pea flour, as a substitute for pollen. Indeed, a very considerable trade is carried on in this line every spring.

A rough-and-ready but very effective plan is to make a thin paste of pea flour and honey. Work it well and press it down into the cells of a tough worker comb. Place this comb next to the cluster, flat above the frames, or lying on the floor-board if there is a deep bottom space. Bees can then start breeding with a full supply near at hand. As, however, water is an utter necessity when brood is being reared, and bees must fly for it, it is questionable whether all this stimulation does much to advance the prosperity of the colony unless in an emergency.

Ballindollock, Scotland. D. M. MACDONALD.

[The fact that bees need water in brood-rearing makes it advisable, when giving artificial pollen, to feed it *outside*; that is, make the bees *fly* for it. If they then can get at the meal they can also get water. For this reason we have discouraged giving nitrogenous food in the hive, mixed either with candy or syrup.—ED.]

YELLOW SWEET CLOVER.

Will you please tell me how and when yellow sweet clover should be sown? also the amount per acre. Will it make good hay, or is it to be used only to plow down for fertilizer? Will it grow on wet soil?

Albion, Pa.

W. H. KLINGENSMITH.

[Yellow sweet clover should be handled the same as the white. We have been in the habit of recommending sowing the seed in about the same way, at the same time, as common clovers. It may be sown with any kind of grain; and if it does not come up right away it will later—that is, if conditions are favorable.

No one ever needs to be afraid of any of the sweet clovers being noxious weeds. They will readily yield to the plow. Plow under as you would common clover, and for the same purpose, and there will be no more of it in that field except, perhaps, around the fence-corners or in waste places.—ED.]

RAISING QUEENS OVER STRONG COLONIES OR IN NUCLEI.

I know the latest system of raising queens and am able to produce them successfully. If I form a nucleus over a strong colony with *wire* cloth between the colony and the nucleus and get a queen fertilized and laying in the nucleus, and then kill the queen in the old colony and remove the wire cloth, will the new queen in the nucleus be accepted by the bees in the old colony? Is this a safe way to requeen? Or would it be better to raise the new queen in a nucleus and introduce her from a cage with candy, the orthodox way?

Mount Airy, N. C.

J. E. JOHNSON.

[Your plan will work, but we would not advise raising queens on this plan. Generally speaking, after the cell-building stage queens should be raised in nuclei on separate stands.—ED.]

FOUNDATION TEN YEARS OLD STILL PLIABLE.

I have just been using some Weed foundation I bought of you in 1900. It is as soft and pliable as the day it was made, and as tough as parchment. I see no reason why it should not be as good after fifty years as it is now.

Fernhill, N. Z., Jan. 3.

O. R. BOSTOCK.

[This is contrary to the lately expressed opinion that foundation should always be fresh. It would be interesting to know whether the bees were able to draw it out as easily as they would the fresh.—ED.]

A LARD-PRESS FOR RENDERING WAX.

Having some wax to render last spring I soaked my combs well in water and heated them up to the proper temperature. I arranged an Enterprise sausage-stuffer and lard-press as for lard-pressing; and, having made a sack of good burlap of a size a little larger than the inside of the press I dipped my melted comb and wax into it and pressed it as dry as I could; then I took the sack out and put it back in the water and melted the wax. I took the top of the sack in one hand, and with a stick in the other I punched and stirred the sack until it was all softened up again, then I put it back and pressed it again and got the wax out in fine shape, as good, apparently, as a wax-press would have done. The lard-press is something that almost every one has, and it does not hurt the press, and saves buying a wax-press.

Dayton, Va.

S. H. BLOSSER.

[There is no question that you can render wax in a lard-press; but unless you repeated the alternate heatings and pressings a number of times you would be sure to lose some wax in the slumgum. Unless you had a small amount of comb to render, you would probably find that you would lose enough in a short time to pay for a good press adapted for pressing combs.]

When you wish to heat up the contents of the sack again, dip off the layer of wax on top of the water, else the slumgum will quickly absorb some of it, making it necessary to do that much of the work over again.—ED.]

WERE THE DRONES WINTERED OVER?

I noticed one of my colonies, a strong one, in normal condition, that had drones flying which must have wintered over. I watched to see if they were kindly received upon reëntering the hive. This they were. A wasp trying to enter the hive was given a warm reception.

I introduced alsike clover in this locality, with the result that it gets sown more and more every year. I have been thinking of sowing sweet clover along the railroad-tracks. What variety would you advise me to sow? Several years ago I sowed a small end of it to the yellow kind, and a little of it to the white. The white always gets mown off before it gets in bloom; but the yellow does not. I would rather sow the white, so as to have something for the bees when grapes and peaches ripen; but I am afraid it will get mown down before it gets to blooming, on account of its tall growth.

Augusta, Missouri.

H. STOCK.

[Drone brood will sometimes be reared in late winter or very early spring. This is particularly so if the queen is old or failing. These early-hatched drones are quite apt to give the impression that they had been in the hive all winter.]

We had one hive in our north yard that had quite a bunch of young drones by the first of March. One might easily suppose that they wintered over, just as you did. Of the two sweet clovers, the white is superior, and the yellow hard to get. You can sow sweet clover along the railroad banks; but you had better get permission from the company. Public sentiment (based, of course, on ignorance) would be against sowing sweet clover in waste places; but the public is being educated through progressive farm papers that now know that the plant is not a weed but a valuable forage-plant. It is a great soil-binder for railroad embankments, and it won't be long before these great thoroughfares will sow the seed themselves for the protection of their property. When farmers, too, welcome it we shall expect a greatly increased source of honey. May the day speedily come.—ED.]

STINGING NOT FATAL TO CATTLE.

On p. 199 Mr. J. F. Semper inquires about bees stinging stock, and then the stock died. If that is the case I should have some terrible damages to pay. I live in quite a dairy district. Last season I wintered 130 colonies here. When the warm days came on, bees went in search of pollen, and they got into the dairymen's gluten-feed bins, and then into the feed-troughs. The cows would cough and gag and kick, so the men could not milk the cows till the bees quit flying. If it would kill stock, there certainly would have been some dead. The bees became so troublesome that we moved some of them. This spring it is not so bad.

Fair Oaks, Ind., March 22.

HENRY ROORDA.

BIND YOUR JOURNALS.

Mr. Todd's account of his unsuccessful hunt through the bee-books for something on flour candy, and the editor's reference to old volumes of GLEANINGS, lead me to describe my practice. While there is nothing new in the idea of binding magazines, it is not generally practiced among bee-keepers. I find that the journals stored away in the closet are seldom referred to, while those nicely bound and placed on the shelves are in frequent demand. One year's issue of GLEANINGS makes a large book. We get it bound in serviceable half-leather for one dollar, and a single volume is worth two or three ordinary books on bee culture for reference. Eight or ten volumes of this kind will make an encyclopædia of bee lore that can not be equaled by all the well-known bee-books combined; and one has little idea of the frequency with which it will be used. In almost every issue there are valuable articles, not of present interest, that are lost entirely unless preserved in some permanent manner. The first cost of the journal is one dollar; and by adding another dollar to the cost we can increase the practical value not only twice over but many times as the value increases with the years.

Atlantic, Iowa.

FRANK C. PELLET.

TO KEEP GRASS DOWN AROUND THE ENTRANCES.

The problem of keeping weeds and grass from growing in front of hives seems to be a vexing one with many bee-keepers. It really is very simple. One way is to use boiling water; but it takes a lot of it, and the hot steam in front of the hives fills the bees with the agony of helpless despair. A solution of arsenite of soda also would be effective; but poison, especially a mineral poison, should never be used for any purpose where something else is available.

Lay a strip of tarred building paper, such as has been recommended for wrapping around hives for winter protection, along on the ground in front of the hives, extending in under the alighting-boards, and weight the paper down with stones, bricks, sticks of firewood, or any other handy material. This to be done in the growing season of the weeds and grass, including two or three days of sunshiny weather. The paper can then be shifted along to some other place, and the operation repeated until the whole yard has been attended to. How many treatments might be necessary during a season I do not know, but certainly not very many.

Carthage, Mo.

B. C. AUTEN.

MORE PROOF THAT BEES MOVE EGGS.

On page 780, Dec. 15, last year, Mr. Samuel Simmins doubts the ability of bees to move eggs. About the year 1882, one of my strong colonies lost a virgin queen; so a little later I cut out a square inch of comb with eggs to give to this colony. I laid this piece of comb near the entrance, intending to put it in the hive; but just then I had to go to dinner. After dinner I found all of the eggs gone out of this piece of comb. I did not see this colony again for more than a week, and then I looked to see if they had a queen, and I found two large queen-cells that were capped over. I was Italianizing at that time, and the eggs which I had given this black colony were from my first Italian bees. The resulting queen was an Italian. If Mr. Simmins will lay a piece of comb containing eggs against the entrance of a hive that has lost a virgin queen he will find that he can raise nice queens.

I intend to prepare a colony for queen-rearing, provide artificial cell-cups, etc., and, when the bees feel the need of a queen, place a frame of eggs that are one or two days old, flat on the bottom-board, and see if the bees won't do their own grafting. This frame must not be suspended or the bees will build cells on it.

Carrollton, Ohio.

C. V. KINTNER.

WILL SULPHITE PAPER-MILLS INJURE BEES?

A sulphite paper-mill is being built here. Some say that the sulphur fumes will kill my bees. If it will kill them, tell me how far away I must move to be safe. I live 1½ miles from the mills now.

Ladysmith, Wis.

JOHN ARMSTRONG.

[We have had no personal experience; but if you are 1½ miles away from the mills it would seem very unlikely that you would notice any great loss. If others, who are in a position to know, have reason to believe otherwise, we should be glad to hear from them.—ED.]

Our Homes

By A. I. ROOT

And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil.—GENESIS, 2:9.

And the Lord said unto Moses, Make thee a fiery serpent, and set it upon a pole; and it shall come to pass, that every one that is bitten, when he looketh upon it, shall live.—NUMBERS, 21:8.

Come unto me, all ye that labor and are heavy laden, and I will give you rest.

Take my yoke upon you, and learn of me; for I am meek and lowly in heart; and ye shall find rest unto your souls.

For my yoke is easy, and my burden is light.—MATT. 11:28, 29, 30.

If you have not recently read the second and third chapters of Genesis I should like to ask you to turn to them. Please read with care especially the third chapter. If, like myself, you are pretty well along in years, I think you will admit this is a wonderful story of the birth and childhood of the human race. No matter what your belief is, I think you will agree with me that it touches humanity as nothing else has ever touched our origin since the world began. When I was less than a dozen years old I overheard an ungodly man censuring God for having placed that "tree of life" in the very center of that garden, and then forbidding Adam to touch it. For over 50 years I have in my mind considered this thing: Why *did* our heavenly Father place there that tree "of the knowledge of good and evil," and then forbid Adam to go near it? Does not the story suggest humanity's struggle even now?

A little child, the baby, that is just learning to reach out its little fingers to explore things, notes how the mother says, "Burny, burn!" as it comes near the hot stove. Is it not so more or less, clear down to old age? A man, like a locomotive, would be useless unless strong steel rails kept him in the "straight and narrow path."

Adam deliberately broke God's holy law almost as soon as the law was laid down, and in so doing set an example of disobedience for the whole human race, and put the stamp of rebellion against proper authority on all his posterity, clear down to the present time. When Moses, by God's command, undertook to lead the people out of slavery and bondage into the promised land he found the "old Adam" rooted and grounded in the whole gang. They were a set of grumbling rebels; and one of their grievances was, they couldn't have the "flesh" and "onions and garlic" that they had when in captivity. The Bible doesn't really say so, but I shouldn't wonder if they complained because they couldn't have "three square meals a day," but I expect to touch on this later on. Their "mutiny" finally got to be so great that God sent "fiery serpents" to discipline them. Right here

we have one of the first examples of God's tender mercy and love for his rebellious children. In order to extend free pardon *instantly* to every penitent child he directed Moses to make and carry aloft the "brazen serpent" that every one who really was sorry for his rebellion might "look and live," as we have it in that beautiful hymn.

Well, friends, although you may not have thought of it, that brazen serpent is *still* up before us, and, "glory to God," we may even yet look and *live*.

Away down along the ages came one who was commissioned to issue an "emancipation proclamation," and who has the power and authority to "make good" his wonderful and precious invitation. Since the world began, just one, and *only* one, has been permitted to use these wonderful words, "Come unto me, all ye that labor and are heavy laden, and I will give you rest. Take my yoke upon you, and learn of me, for I am meek and lowly in heart; and ye shall find rest unto your souls. For my yoke is easy, and my burden is light."

Some of you may now object to the way I am going to use this beautiful and gracious text; but I feel sure the Holy Spirit is back of me when I try to tell you of the wonderful way in which many of you, at least, may find *emancipation* from your troubles.

The "yoke" Jesus mentions is the yoke of *self-sacrifice*. You must give up thinking of *self* so much. If you want your burdens to be *lighter* you must give up and forget selfish appetites and selfish notions. You must commence following in the footsteps of him who "pleased not himself."

With this long preface I am now almost ready for my special message to *your own self*. Now, this is not for somebody else, mind you; it is for the one whose eyes rest on this printed page. The "revelation" came to me in this way:

I have just one brother living, who has been for about 20 years in Arizona. He has just done a most sensible thing in deciding to come down here to Florida and make us a visit. If you, my friend, have neglected for many years to visit your brothers and sisters, get right at it (before God takes you away) and see how much good you may do by so doing. Well, this brother is no taller than I am, and yet he weighs about 180 lbs., while I have seldom gone beyond 130. Several years ago he was in poor health, and had distressing night sweats. About three years ago he discovered that when he ate very light suppers this trouble was better; and finally, when he ate nothing at all after his noonday dinner, the sweats entirely disappeared. I believe that, about the same time, he took up having a sponge bath with cold water every morning. Isn't it funny that he, without knowing it, has adopted Terry, so far, almost to a dot—"a cold bath every morning, and two meals a day"? Simple, isn't it? Well, Mrs. Root has trouble about sleeping, more or less, and she tried "no supper." Very soon she decided she felt certainly as well, and perhaps a lit-

the better, so the supper was prepared for me alone. Please excuse me here for taking a little space to say that for years I have been most of the time clear used up before every one of the three meals, and, most of all, when it comes "supper time" toward the close of the day. Mrs. Root has for years recognized that, unless I had some good nourishing food for supper, and a good sleep *after* supper (as well as before dinner), I could never hold out to attend to my letters and reading my periodicals during the evening. "Jess" (my brother) assured me several times, that, after just a few days, I would get all over feeling faint, and get through my evening's work *all the better*; but when, for some reason, my supper had been delayed, I had felt so faint and exhausted I could not think it possible. It is true, I had often read what Terry, the good friends at Battle Creek, Mich., Upton Sinclair, and others have said about two meals a day; but I could not scrape up faith to believe such a thing was possible for me. Well, Mrs. Root protests about my "rushing into print" before I have tried it longer; but I really feel as if I couldn't wait, without telling you I have now tried it several days; and, although it takes a little "self-denial" (about 5 o'clock every day) I feel very much better in every way without any food after our noonday meal. May God be praised for the "emancipation," not only for myself, but for the "dear wife" who has been tied down to the *slavery* (yes, that is the right word) of "getting supper" for a nervous used-up husband for almost *fifty* years. Through all her busy life she has objected to letting any thing or anybody "go hungry," and even now she worries some for fear I shall "go hungry" and not mention it because of making her trouble. Yes, I do sometimes feel a little hungry when I go to bed (about 10 P.M.), but in the morning I never feel hungry the least bit; in fact, I feel so *exceedingly* well that several times they had trouble in hunting me up (out among the chickens), and getting me to "come to breakfast."

Well, now, suppose you figure up how many tired women there are in this world of ours who would gladly be "emancipated," like Mrs. Root, from the slavery of supper-getting. It *may* prove a sort of "yoke" to some of us; but, O my friend and brother! you *will* find, if you go about it in the right spirit, that "my yoke is easy and my burden is light."

If Terry and I succeed in proving that suppers are superfluous (or worse), what shall we say of the evening socials and banquets? Who is the unwilling "slave" that provides all these expensive foods, and afterward washes and wipes the *wagonloads* of dishes? Is there a Moses coming *some time* or *somewhere* in the future to deliver us from the lash of the cruel driver and bring us into the "promised land," even a land flowing with milk and honey?

My brother has been, most of his life, proprietor of a drugstore. His son is a prominent physician with a good practice; but

when he had stubborn night sweats, did he take the remedy from the great array on the shelves of his drugstore? I tell you, nay; he took a cold bath every morning, and ate nothing after the noonday meal.

Terry suggests that two meals a day gives the digestive apparatus a chance to rest up a little—a sort of "vacation." In my case I might almost say it has been the first real *vacation* in thirty or forty years, for I have had three good meals a day almost all my life. Omitting supper is a little different from the "no breakfast" plan; but I think it rather better. When you are ready to sleep, the stomach and bowels are or should be practically empty and at rest; and after you have had a big drink of pure water, when you first get up (*a la* Terry), your clean and washed-out system is ready to do good work with the breakfast. In fact, we might almost say there has been a sort of "cleaning house" and getting rid of all rubbish.

Mrs. Root suggests that, while no supper may be all right for grown people, especially elderly people like ourselves, it would hardly do for children and youth. This may be true. You know the "chicken books" tell us to feed the very young ones every two or three hours, etc. Well, our boy Huber, when at college, of his own accord got on to the no-breakfast plan and kept it up for years, and declared that, by so doing, he got on with his studies better. When in poor health he urged me to try it; but I declared all the time I was sure it would never answer for *mè*. Perhaps some of you ask, "How about my apples" (the "best medicine in the world," you know)? Well, I didn't have my apples last night, and I feel so well this morning I think I will take my fruit hereafter at noon or shortly after dinner.

God told Adam (and Eve) not to touch the forbidden fruit, but their love for new things, and their low carnal appetites prompted them to listen to the serpent, and they fell as a consequence of disobedience. God is, in like manner, trying to tell us (if we would but listen) to beware about letting our love for "good things" prompt us to make a bad use of them. Some of us have already acquired unnatural and perverted appetites; but, may the Lord be praised, there is help even for such. "Take my yoke upon you," and you will *surely* find "my yoke is easy, and my burden is light."

HOME-MADE CRUSHED WHEAT.

Mr. A. I. Root:—I have just been reading what you say in GLEANINGS, Feb. 15th, about parched wheat for breakfast food. We have used it for several years, and I should like to tell you how we prepare it. We get two bushels of wheat in the fall, when it is first thrashed, and take it to the gristmill and have it run through the smutter so it is cleaned the same as they clean it before they grind it for flour. Then when we prepare it we take four or five quarts, or as much as we wish to grind at once, and wash it in two or three waters, and then put it in deep tins. Have the wheat about two inches deep in the tins, and put it in a warm (not too hot) oven and let it dry. Heating it when it is wet cooks it and roasts

it just enough to give it a good flavor; then we grind it in a hand mill and cook it in a double boiler the same as you would cook oatmeal. It is better than any food you can buy, besides being so much cheaper. I have tried to get my neighbors to use it. They all like it better than any thing else of the kind. Some have used it for awhile, but do not follow it up, because it is so much easier to buy something already prepared. This wheat prepared in this way is too hard to eat without cooking. I should like to have something of the kind I could eat dry; and one object in writing this letter is to ask you to have your people manufacture a machine (to use by hand) to crush wheat like the Pettijohn breakfast food. A pair of smooth foundation-rollers with a hopper on top to hold the wheat and let it run down on the rollers would do the work. The wheat could be soaked so it would crush easily, and dry after it has been run through the mill. If you would get up such a mill you could sell hundreds of them. It always seemed foolish to me for farmers to sell wheat for two cents a pound and then buy it back at ten to fifteen.

I am what you might call an old-timer. I started in the bee business about the time you did; read your writings in the *American Bee Journal* before you started GLEANINGS, and then took that when you first started it, and have taken it much of the time since. I got one of the first extractors you sent out, and I have it yet, but do not use it. I sold you quite a lot of bees by the pound one year in the 70's, and some queens too I think. I contemplate going down to Florida next fall and buy little place, and go every winter as you do. This winter is pretty hard here in Northern Michigan. The snow is over two feet deep, and keeps blowing in the roads so the track is built up three to four feet high.

Free Soil, Mich., Feb. 23.

L. D. ALLEN.

I heartily agree with friend Allen, and find scorched ground or crushed wheat more wholesome and more delicious than any breakfast food or cereal on the market. After the wheat grains are steamed or boiled a little, only a little force is required to crush them, so they will be about the same thing as the Pettijohn rolled wheat in the market. Will our folks in Medina let us know how cheaply such a pair of metal rolls can be gotten up?

High-pressure Gardening

By A. I. ROOT

HIGH-PRESSURE GARDENING, ETC., IN FLORIDA IN MARCH.

With the good prices during the past winter, celery has been the great money-making crop, and, indeed, I might say during the past two winters. The celery industry has been crowding more and more into this part of the State, for two reasons—first, the frosts that we have are lighter because we are so far south, and also because of our nearness to the warm waters of the Gulf; secondly, because of the wonderful flow of artesian water in almost every part of Manatee County. Now, when I tell you what is being done here do not imagine every one can do it. Almost all the time I get letters asking if the writer can come here and make a living; and quite a few ask if it is *true* that a man can *get rich* on ten acres, etc. Any one of fair ability should be able to make a living here; and there are a few who really do get to be fairly well off on ten acres or less. My neighbor Rood is, or perhaps was,

an educated lawyer; but he likes gardening and bees so well he has given up his office in town and become a farmer. Well, Mr. Rood seems to make every thing pay that he touches. When he got the celery fever a year ago I cautioned him about dropping (or at least partly) his strawberry and lettuce that were paying so well, and venturing on something he had never tried. But this is what he did: He went all over this region, used his eyes and ears, and asked questions; read the books and papers, and finally made a success the very first time trying. He has *promised* to give GLEANINGS some figures in regard to what he has done and what it cost; but he is such an exceedingly busy man I fear he won't get around to it. On his best ground the crop sold for something like at the rate of \$1350 per acre.

A hive of bees on the scales gathered last Sunday, March 20, 9¼ lbs. of orange-blossom honey, and this one hive has stored already over 100 lbs. of this beautiful white honey, almost if not quite equal in looks and taste to any honey anywhere. Now, if I should give the above, and nothing more, very likely a great lot of you would "swarm" down here with your bees. The truth is, this is one of his best colonies, built up three stories high. Another truth is, this is almost the first good flow of orange honey for about three years, and the yield is probably confined mostly to localities below the dangerous frost-line.

Even in this county you see deserted orange-groves, gardens, etc., where a lot of money has at some time been expended and then given up. A few days ago I said to Mr. Rood:

"Why doesn't this man go around among his neighbors and see *how* they do things instead of trying to farm and grow the same crops he did up north?"

He replied: "Well, I declare, I don't know. He just stays right here at home, and doesn't go anywhere or see any thing. His land is just about as good as mine, but he hasn't yet even ditched it to get the water off."

I have spoken several times of our mulberries. Two years ago they were little trees perhaps a yard high. Now they are great spreading trees as large as apple-trees in the North, and are *loaded* with great luscious fruit. After breakfast and after dinner I devour them by the quart. They are so dead ripe that when a little breeze comes, they drop all over the ground; but there are more of them than 25 hungry Leghorn hens can take care of. They are so large you would say a common hen could never swallow one; but they manage to "make it," probably because they have practiced on oat-stalks 15 inches long. When a neighbor calls we invite him out to see the mulberries; and it's just fun to see each one utter exclamations of surprise at their size, abundance, and beauty, and, still more, when they taste one. We have now only six trees, but we are planting them in each one of our eight poultry-yards. If you want cuttings or

trees, write to Reasoner Brothers' Nursery, Oneco, Fla.

The first shipments of lettuce brought as good or better prices than heretofore; but toward spring there seemed to be a universal complaint about heading up properly. On this account neighbor Rood's lettuce-field has given my nearly 300 chickens (old and young) all the lettuce they could consume for about two months past. We wheel over to the chickens all that isn't fit for market.

FERTILIZING TRUCK LANDS IN FLORIDA.

On p. 240, April 1, are some statements in regard to the cost of fertilizing our Florida lands that may give a wrong impression. I have just been looking at some potatoes on neighbor Rood's land that surpass any thing I ever saw in Ohio or Michigan either. When asked how much fertilizer he applied per acre he answered something like this: "Mr. Root, I did not put any fertilizer at all on these potatoes; but I did give the ground a very heavy application when in celery, just before these potatoes. Let me explain. As I considered this one of the poorest spots on my place (and *new ground*), I gave it the heaviest application I have ever made on *any* piece of ground. I suppose we put on something like *four tons* to the acre (where you see these best potatoes) of a fertilizer costing \$40.00 per ton. The celery crop alone sold for over \$800 per acre."

These potatoes were larger foliage, heavier stalks, and better color than I think I ever saw before. Let me explain, that down here there are no Colorado beetles, no *flea* beetles, and no insects of any kind to puncture and perforate and disfigure the handsome potato-plant, for it *is* handsome where permitted to grow free and natural. As they were just coming into bloom, no one can tell as yet what the crop will be; but Mr. Rood dug into a hill and found fair-sized potatoes as clean and smooth as new-laid eggs. Notwithstanding that potatoes may be grown here almost all the year round, nearly everybody uses potatoes from the North. Other crops pay so much better, we can't afford to grow our own potatoes, even if poor ones shipped in *do cost fifty cents a peck*. Our home-grown ones are equal in quality to any I ever tasted in Ohio, Michigan, or Bermuda.

Poultry Department

By A. I. Root

POULTRY SECRETS, ETC.

A subscriber sends us the following advertisement, and asks us to investigate:

SURE DEATH TO CHICKEN LICE AND MITES GUARANTEED AT SMALL COST.

We have discovered a cheap and absolutely sure method of thoroughly exterminating chicken lice and mites from poultry-houses. This method has been thoroughly tested with uniform success, and we now offer to make it known for one dollar.

Remember, by our method chicken lice and mites will be entirely destroyed—eradicated—in a few hours at slight cost if our very simple instructions are followed. We are so sure of this, that, in the event of failure to destroy the vermin completely, we will promptly return the money received.

Only \$1.00 for this knowledge, which will enable you to get your poultry-houses free from hen lice and mites if you should be so unfortunate as to have either of these pests upon your premises. Rid yourself of them by sending \$1.00 to

CLOVER HILL FARM, Little Silver, N. J.

A dollar should pay for a good-sized book covering the *whole subject* of chicken lice and mites; but as I seem to be in the "business" I sent the dollar. In due time I received directions (that might be printed on a postal card) for fumigating the poultry-house with hydro-cyanic-acid gas, a method that has been in use for years for killing all insect life in greenhouses. It has been described again and again in our agricultural press, and, so far as I recollect, Mr. Lovett's directions are almost word for word like that of a government bulletin sent out a few years ago. It is also used under a tent for killing insects on orange and other trees. All Mr. Lovett has invented or discovered is using it for *poultry-houses* instead of greenhouses. Of course, the chickens must all be driven out; but will old poultrymen please tell me how much would be gained by cleansing the *house* if you let a flock of infested fowls come right in, people all the cracks and crevices once more just as soon as this volatile gas is out of the way? Zenoleum, carbonoleum, and all lice-killers sold penetrate the wood and keep out vermin for months or years afterward. But *that* isn't all. Before you can use this "dollar secret" you must make all your poultry-buildings absolutely *air-tight*. How much do you suppose it would cost *me* to make my six Florida (wire netting) houses so they would hold this gas made from sulphuric acid and cyanide of potassium?

This whole thing is a pretty fair sample of the average "poultry secrets" advertised for a dollar or more. I hardly believe a poultryman with the reputation Mr. Lovett has would be led to go into such a thing were it not that so many others have been "setting the pace."

One thing more: The Cyphers people and other dealers have for years advertised sulphur candles for fumigating and destroying all insect life in poultry-houses. Why should Lovett or any one else want to use this very dangerous and expensive gas, comparatively, when cheap common sulphur does the business perfectly? Is it not about time for the Department at Washington to forbid the use of the mails to such chaps?

BACK TO MEDINA, OHIO.

We are now planning to leave Bradentown, Fla., for Medina, on April 19. Will our many kind friends take notice, and direct all missives for myself to Ohio, after they see this? A. I. R.

Cleanings in Bee Culture

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EDITORIAL

By E. R. ROOT

THE Ohio foul-brood bill is now on the calendar for vote in the senate. Write your senator at once, urging his support.

Later.—The bill has now passed both houses.

D. M. MACDONALD makes a strong plea in this issue, page 296, for the much condemned black bees. The article is ably written and very fair. It is worthy of careful reading.

THE chilly weather of the last two weeks, that seems to be almost universal over the Northern States, will doubtless cause a great deal of chilled brood. Do not jump at the conclusion that you have foul brood.

OLD OR NEW FOUNDATION.

ATTENTION is called to a Straw of Dr. Miller's in this issue, on the relative merits of fresh and old foundation in sections. The doctor takes the ground, it will be noticed, that the bees will work on the one as well as the other. We shall be glad to get the experience of others who have tried it.

PARCELS POST.

WE have not said much lately about parcels post. It is a strategic time now for bee-keepers to write their Senators and Representatives, urging their support of this needed legislation. The following, from the *Ohio Farmer*, shows the benefits that would accrue from a parcels-post system. It will be especially valuable to bee-keepers:

The first postal need of to-day is a rural service on a paying basis with the elimination of the postal deficit. A cheap general parcels post will quickly follow. The posting of one five-cent packet each week by the average farmer to and from the town where he sells his produce and buys his supplies will insure a postal income of \$10.00 a week per average route, or \$20,000,000 a year for the entire service. The wants of the hundred families on the average route surely warrant the expectation of a business of at least one ten-cent packet a week to and from the farmer's market and his home, with a resulting rural income of over \$40,000,000. Even this business implies a constant load by the carrier of less than 18 packets weighing, possibly, 300 lbs.

The establishment of a daily service of two vehicles going in opposite directions over the same course will soon be needed; and cutting down the haul of all matter one-half will at once quadruple the capacity and the efficiency of the service. We are assured by the highest authority that there are several routes where this proposed service will be a

success from the start. Its trial will prove a wonderful object-lesson as to the benefit of good roads and of machinery adapted thereto. We pray the financial and personal aid of all the friends of postal progress, and especially the aid of the press, in arousing the public opinion needed to secure the needed legislation.

J. L. COWLES,
Secretary-Treasurer of the Postal Progress League,
361 Broadway, New York.

No one is fighting the parcels-post system except the small country storekeeper and the express companies. It has been a success for many years in Europe, and we should have had it long before this had it not been for the Cannons and Aldriches in Congress.

Later.—See Colorado department.

"BEE-KEEPERS' LEGAL RIGHTS."

THE new edition of "Bee-keepers' Legal Rights," by the National Bee-keepers' Association, has just been issued from the press. Like the old edition it contains copies of laws and court decisions relating to bee culture. Besides that, it has a long array of testimony showing the valuable service performed by the bees in pollinating fruit-trees. The last few pages are devoted to copies of the various foul-brood laws as they stand on the statute books in the several States to-day.

Every member of the National will doubtless have a copy, and every one who has not would find this book, "Legal Rights of Bee-keepers," worth the dollar membership fee alone. He should be familiar with its contents, so that when trouble arises he can meet the enemy with hard cold facts, both in and out of the court-room. This is a case where knowledge is power.

See what General Manager France says about it in another column. Of course, it is understood that no one can get a copy unless he is a member or is enrolled as such, as the book is not for sale.

NON-SWARMING BROOD-CHAMBERS.

In this issue, pages 295 and 299, we show illustrations of two different styles of anti-swarming devices. As we understand it, these have not been tried very extensively. The basic principle seems to rest in having a large clustering-space either beneath or in front of the brood-chamber, but such clustering-space so arranged that no comb can be built in it. The idea seems to be an adaptation of the Aspinwall principle of furnishing a clustering-space; but instead of placing that space *between the frames*, as does Mr. Aspinwall, these other people would place it in front of or under the brood-chamber.

If we are not mistaken we had a talk with Mr. Aspinwall regarding some plan of this kind, and he told us he had been over this ground, and that the clustering-space had to be disposed between the combs to be effective.

We present the idea in two different forms, because it may involve a principle having some merit; but until it can be tested, everybody should go slow, for we have been fooled so many times about this swarming proposition that, when a new thing looks good, like this, we should remember past experiences.

PROSPECTS FOR THE SEASON.

A large number of reports have come in since our last issue, and only about one in four is unfavorable; that is, three out of four report good wintering, good prospects for the season, etc. As is always the case, there are sometimes conflicting reports from localities close together. This is often due to difference in care used; but this year it is quite probable that the difference in the quality of the stores has a great bearing on the matter. As we have already stated, at one of our outyards nothing but honey-dew was gathered, while two miles away a fair crop of light honey was secured. The contrast was quite marked this spring. At the yard where so much honey-dew had been gathered, many of the colonies showed symptoms of dysentery, and, all together, they were in much poorer condition than at the other yards. Sugar was fed in both places; but in spite of this the honey-dew still in the combs in the late fall made trouble.

The light snow which has fallen over a large portion of the North, instead of hurting the prospects has served to put the clover in much better condition than it was before. Snow in April is almost always good for clover. Fruit has been injured to some extent by the frosts; but the bee-keeper, unless he is a fruit-grower also, can console himself with the thought that, when fruit is scarce, honey is apt to be higher in price.

ARE BEES KILLED WHEN FRUIT-TREES ARE SPRAYED WHILE IN BLOOM?

A YEAR ago, as will be seen by page 514 of our last year's volume, we published a letter from O. B. Metcalfe, of Metcalfe & Parks, Mesilla Park, N. M., showing how five of their yards had been almost entirely ruined because neighboring fruit-growers sprayed their trees while in bloom; of how not only the bees died by the thousands, but the brood also. The other yards remote from this spraying did not suffer any injury. We have had other proof from time to time of how this ignorant spraying at the wrong time ruins the bee-keeper's prospects for honey, if it does not entirely clean out all his bees. The following letter gives further evidence along this line:

We are having bad luck with our bees. One of our neighbors sprayed his fruit-trees while in full

bloom, and it ruined us. The bees are still dying. That was four days ago. We have had a big rain since, which seemed to help somewhat. Does Paris green usually kill the brood? The bees carried out larvæ in all stages. Does it kill or injure the queen?

I wonder if there could not be a law passed in Indiana in regard to spraying fruit-trees while they are in bloom.

Lebanon, Ind.

J. W. SWAILS.

We have not thought it necessary heretofore to give any special prominence to the fact that bees are killed if trees are sprayed while in bloom; but as the fact was doubted by one or two of our very good bee-keeping friends, we shall be glad to hear from others who have suffered. No damage, of course, occurs when the non-poisonous mixtures like lime and sulphur washes and the kerosene emulsions are used; but, as any intelligent fruit-man knows, these are insufficient to kill all the pests.

During the years past we have had a good many hundred reports where bee-keepers have written in and asked why their brood was dying, supposing it had died from foul brood; but investigation showed that in many cases, at least, this brood was poisoned, and that as soon as the spraying season was over it ceased to die.

In answer to Mr. Swails we may state that there is no law against spraying fruit-trees while in bloom, in Indiana. There is no such law in force except in the State of New York, in Ontario, Canada, and possibly Michigan. Conditions became so bad in York State that the bee-keepers of that commonwealth put in a strong plea to their Legislature and secured the law.

PREVENTION OF GRANULATION OF COMB HONEY BY KEEPING IT IN A WARM ROOM.

ON page 134 we spoke of the fact that a carload or two of our western alfalfa honey showed a tendency to granulate, and that we expected to arrest granulation by storing it in a warm room subject to a temperature of between 80 and 90 degrees Fahr. Some experiments that we had conducted a year or so before on a small scale led us to believe that we could not only arrest granulation, but that we could actually reduce it. The temperature of the room in that case was slightly above 100, and some cakes of honey that was granulated solid were actually brought back to a liquid condition; but we found that this high temperature had a tendency to make the combs sag in the sections.

This winter we put a carload and a half of comb honey in a large room, into which we had put extra steam radiation, maintaining a temperature nights and Sundays continuously of between 75 and 90 degrees. While we held granulation in check, we noticed that a good many of the combs had sagged to an extent that it spoiled the chance of marketing them. Nearly all the honey that has been held in this high temperature has suffered slightly in flavor. The average consumer would not notice it,

but an expert can readily detect a comb honey that has been kept in a hot room for three months from that which has been, say, a month off the hive. With this slight impairment of flavor, and very slight it is, there is a barely perceptible darkening of the honey itself. Taking it all in all, the experiment conducted on a large scale is somewhat disappointing. It is almost a case of between the devil and the deep sea. A comb honey that is granulated to a greater or less extent is slow selling, and at very moderate prices. If we stop the granulation by the hot-room plan, and prevent other honey from starting, we run the chance of darkening and impairing slightly its flavor.

WHAT TO DO WITH CANDIED COMB HONEY.

We have been conducting some other experiments in liquefying candied comb honey, running it through a capping-melter machine, and, by the way, one of these machines is just the thing for this purpose. The combs are cut out from the sections and dropped into the capping-melters. The candied honey and the wax melts up together. The combined product flows over into a receptacle. A pipe connecting with the bottom draws off the free honey while the wax flows over the top. The thing goes on automatically about as fast as a man can cut the combs.

Experience shows that if candied comb honey can be sold for 10 cents to a certain cheap trade, that it is better to sell it that way than attempt to melt it up; but if it won't bring 10 cts. then one can make nearly that figure by selling the honey in the extracted form, and the wax, when melted up, at a combined figure that will net nearly 10 cts. Strangely enough, the honey that runs through the capping-melters in this way is of good color and body. The body, however, is a little too good, that is to say, the honey is very thick and waxy, and probably would not candy readily; but there is a very slight impairment in the flavor—so slight that none but an expert would notice it; but when this erstwhile candied honey is run through the capping-melter in connection with the wax, and put alongside of honey that has been taken from the hive and not heated, the consumer would notice a slight difference in favor of the latter. If they were kept separate he doubtless would not see or taste the difference.

BABY NUCLEI FOR THE REARING OF QUEENS; WHY SOME OF THE PRATT OR SWARTHMORE METHODS FAILED.

ON page 283, in his regular department, our old correspondent Mr. G. M. Doolittle does not take very much stock in baby nuclei for the rearing of queens. But the form of baby nuclei that he particularly condemns we do not think is now in use. We tried out the Pratt (or Swarthmore) nuclei (the kind he seems to have in mind) one season, and proved that we could fertilize queens on that plan; but as the little clus-

ters of bees were too much inclined to swarm out and cause trouble we finally gave them up. The larger twin nuclei, capable of holding one-half to three-fourths of a pound of bees in both sides have given excellent results. The baby hives are made of $\frac{7}{8}$ -inch lumber; have a double cover and a telescope that slips down over the whole, reaching two-thirds of the way down to the entrance. The form of the hive is almost cubical; and when there are two clusters of bees (one on each side of a division-board $\frac{1}{8}$ inch thick), approximating 1000 to 1500 bees in each, experience shows that no cell or virgin is chilled. It is very easy to determine when this takes place. Yellow queens, if they are chilled at any time in the cell or virgin state, are apt to turn dark and look small. The fact that some of the most prolific and best queens we have ever reared have been raised in these large twin baby nuclei goes to show that they are the equal of the larger colony or larger nuclei having the brood scattered over a much larger surface, more exposed to the changes of temperature. A small clustering-space of two or three thousand bees in a cubical or compact double-walled hive will keep as warm as or warmer than a much larger cluster in a long flat brood-chamber having Langstroth frames. By the way, this frame makes a poor nucleus. It is too large and too long. Our large twin nuclei are used only during the months from May to the first of September; that is to say, during the hottest months of the year. Before and after that time our queens are reared in full-sized colonies. Apparently Mr. Doolittle has much cooler nights during the warm months than we have.

There were a good many fancy tricks of the trade that the late Mr. Pratt was able to work successfully that the rest of us who practice queen-rearing on a large scale could not make go. Mr. Pratt was a genius—a wonder in his line. We have seen him perform feats in queen-rearing that others could not accomplish. On a large commercial basis many of his ideas were impractical. In his mild climate he could do many things that were impossible elsewhere. It is not strange, then, that many who tried to follow him failed.

We presume that we have criticised his methods as much as any one; but when we saw him actually do the stunts that he described, we doubted no longer. As most people lack either his special environment or his consummate skill, it is a waste of time and money for them to attempt to follow some of his ideas, at least. For example, his 50 or 100 bee baby nuclei were impracticable in most localities. We could make them work only during the very hottest months of the year. At any time they were liable to swarm out, or, worse yet, be robbed out. Moreover, they had to be supplied with fresh bees every so often. We experience none of these troubles with our much larger double-walled twin nucleus hives.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

SIX SPACES of bees on a frosty morning the first of May is better than more or less, says Doolittle, p. 211, and, as usual, I suspect he's right. I don't have many as good as that ever, and can easily reduce any that exceed it (and I always do), but the laggards are what beat me.

J. L. BYER wants winter entrances not less than 10 or 12 inches by $\frac{1}{2}$, and backs up the idea with pretty stiff arguments.—*Canadian Bee Journal*, 72. [Mr. Byer may be right. We noticed that some of our colonies last winter that had, by mistake, larger entrances than usual were not only in fine condition, but the combs were dry and sweet. There is a nice golden mean somewhere, and we shall invite a discussion of the subject next fall.—ED.]

LOUIS SCHOLL, you want to know, p. 246, when I'm going to try some bulk comb honey. I've just reread your array of troubles in trying to produce section honey, p. 39, and it does look as if I'm a goose to go through all that and then get no more for sections than bulk. But why didn't you tell me all that before my bees got so in the habit of storing in sections that I don't have a tithe of the troubles you catalog? Still, may be I'd better. Say! do you *know* of any market in the North where I can sell bulk for the same as I do sections?

F. GREINER, p. 181, agrees with the editor, that "we shall sooner or later be compelled to give up the use of sections on account of the scarcity of suitable timber to make them." Well, we can go back to four-piece sections, same as we first used, and almost any timber will do for them. [It will be at least ten years, and probably more, before we shall have to give up sections. In the mean time, it is our opinion that some form of carton to hold out comb honey will gradually take their place. Basswood is a rapid grower, and it is safe to say that a large proportion of the sections of to-day are made from lumber not over ten or fifteen years old. A basswood in front of the editor's home is 11 inches in diameter, and only about eighteen years old. Another tree the same age is 9 inches. As a general thing, basswoods will grow more rapidly in a forest than out in the open, for they seem to like shade in their earlier years.—ED.]

FIVE or six weeks' time is given as the lease of life of a worker in the busy season. That was the belief fifty years ago. At that time, and for years afterward, it was easier than now to test the matter, and thousands had the opportunity to test it, for pure blacks were common then and scarce now; and when an Italian queen is introduced into a black colony it is easy to tell when the

last black disappears. The many who observed agreed that in the busy season about six weeks is the limit of life, and that belief has gone unchallenged through all these years until now, when we are told by G. A. Wright, page 270, that with his hybrids the limit was 27 days. It is easier to believe that Mr. Wright's bees are exceptionally short-lived, or that some mistake has been made in observation—for some hybrids can not be distinguished from Italians—than to believe that every one heretofore has made the stupendous mistake of making the time 55 per cent longer than it should be. It must be remembered, however, that if six weeks is the life of the last bee that disappears, the average must be at least a little less than that, for it is not likely that all should die at exactly the same age. [The trouble with our friend Wright was that he was basing his conclusions on practically a single experiment. With hybrid bees he would have had no means of proving absolutely the correctness of his conclusion; for many hybrids will show up like nicely marked Italians.—ED.]

"FOUNDATION should be fresh. If it was put in sections the previous year, the only thing is to pull it out and melt it over." That's what one says. Another says, "Foundation doesn't spoil with keeping; it's just as good when five years old as when fresh from the mill." How can it be that such opposite views are held? Can both be right? In a way, yes. I've had experience both ways. Every year I aim to have ready in advance enough sections filled to answer for the biggest kind of crop. So, of course, most years a few thousand will be left over, and I think I've had some sections that had been filled four or five years. I couldn't notice but that the bees began on the foundation just as promptly as if it was fresh. Of course, I think there must be some difference—the fresher the better. But the difference is very little. If not put in sections, but kept packed in sheets, it's hard to say how many years it would keep. On the other hand, I've had sections of the previous year's filling that the bees would none of. Such sections would be left entirely empty while the rest of the super would be filled. They had been left on the hive at a time when no honey was coming in, and the bees had given them a sort of polishing, perhaps a thin coat of propolis. The only thing to do is to melt up such foundation. The moral is: Don't worry about foundation being old; but never allow sections in the care of the bees when they can do nothing with them but spoil them. If there's a dearth of considerable duration between two honey-flows, take off the sections at the close of the first flow, and then put them on again at the beginning of the next flow. But early in the season, before the first flow, no harm comes to the sections from being on; it's in the fall that the mischief is done, mostly by being too slow about taking off all supers promptly at the close of the flow.

Notes from Canada

By R. F. HOLTERMANN

So Dr. Miller has twice had "the last word" upon the rights of bee-keepers to a location. Seeing that he has a good many sound arguments to reply to, his opportunities have not exceeded his needs.

PREVENT ROBBERING.

To Jacob Alpaugh, inspector of apiaries, credit is due for the idea of warning, by letter, the bee-keepers in foul-brood districts against allowing bees to rob out hives in which colonies perished during the winter or early spring. [This is very important.—Ed.]

THE WEATHER.

It is scarcely necessary to say that the weather has been very remarkable. During the week beginning April 4 the bees had a royal time on soft maple, willow, etc.; they flew heavily loaded; and whatever the outcome may be, so far they have had a better chance to secure stimulative food than they have had for years.

CHUNK HONEY.

Wesley Foster, page 209, April 1, condemns the idea of producing chunk honey in Colorado. In Ontario, to encourage the production of comb honey in large frames, cutting this out and putting pieces of comb in vessels, and pouring extracted honey on it, would be a great mistake because of our rapidly granulating northern honey. Think of a customer buying this on faith as partly comb, or think of the dealer trying to show the customer the comb honey submerged in the granulated extracted. I doubt if people have faith enough in one another in Ontario to deal in this way very extensively.

THICK SYRUP.

On page 206, April 1, the editor refers to thick syrup fed late, stating that "good results" were obtained, etc. Where there are some natural stores, especially if they are of doubtful quality, the later the bees are fed the better, if the syrup is thick. Let the bees consume the inferior stores while they can fly. Then by late feeding are the bees not less likely to start brood-rearing? and will there not be less excitement and waste? I would consider the recapitulation by the editor excellent, only I would dwell a little more strongly on the danger of honey-dew in winter stores. [Your point is a good one. By feeding late we give the bees an opportunity to use up as far as possible their old and undesirable stores, such stores as would not be suitable for a winter food. This may account in part for the good results following our late feeding.]

It is also true that early feeding has a tendency to stimulate brood-rearing, especially

if that syrup is thin. The wear and tear on the bees in reducing this syrup to the proper consistency so pulls down their vitality that some of them die even before winter actually comes on. Feeding always has a tendency to force the bees out in flight, and if the weather should be a little chilly many will be lost. Very late feeding with thick syrup in weather too cold for bees to fly can not force them out, and, what is more, the syrup is immediately stored. As a result there is little or no wear and tear on the bees that must necessarily undergo the rigors of winter.—Ed.]

CONDITION OF BEES.

It is probably a good many years since bees in Ontario have come through the winter as well as they have this season. Colonies wintered in the cellar or packed outside (I have both) are alike in good shape. During the past week, beginning April 4, I went through nearly all the colonies, examining them sufficiently to determine that they had queens and did not lack stores. I found plenty of capped drone brood, but, so far as I can now remember, there did not appear to be much hatching worker brood. Is this because the winter was so very steady, and the bees remained in their packing quietly clustered? [There were plenty of young bees in this locality at this time.—Ed.]

SEALED COVERS VS. ABSORBENTS.

On page 207, April 1, the editor, in part, states: "We have a suspicion that those who so loudly champion the absorbing-cushion plan of wintering may not have tested side by side the sealed-cover and absorbing-cushion plan." May not conditions have much to do with this question? I have known of cases where prolonged cold, at a time when the hives were not covered by snow, resulted in the entrance being frozen up or practically so by the condensing moisture. When the moisture passes up through the packing there is no danger of this.

Then I have a suspicion that these covers are not sealed if sealing means that no moisture passes up and is absorbed by the packing. In painted hives I have been surprised to find moisture pass through the $\frac{3}{8}$ -inch wall and then form a blister between the board and paint. I have, however, a case this spring where a colony wintered well, although, through an oversight, having a hive-cover that was covered on top and the sides with galvanized iron; yet I have not sufficient faith in the method to try the plan. Locality surely has something to do with results; in the extreme northerly apicultural sections, in my estimation sealed covers are risky. [We quite agree with you that conditions have much to do with this question. In localities where the entrance is liable to be sealed with ice, the absorbent plan doubtless would be better.]

When we refer to "sealed covers" we mean those that are secured by the ordinary propolis sealing. They may or may not be hermetically tight.—Ed.]

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

CORRUGATED DRIP-BOARDS.

The corrugated drip-boards are away ahead of the wooden drip-sticks. They are more quickly put in a case, and they also make a good cushion when the case is jarred. The drip is absorbed if not too much, and there should not be much in a good case of honey. After unpacking several hundred cases where the corrugated boards were used I can say they look good to last.



SWARMING IN THE WEST.

Swarming is not as serious a problem in the West as in the East, for two reasons. There may be other reasons, but I will give only these two now: The honey-flow is never so rapid in the alfalfa regions as in the white-clover, basswood, or buckwheat localities of the Eastern States. The bees do not become worked up to such a high tension as where the flow comes on in a very torrent. If there is not a sixty-day flow from alfalfa the surplus is not likely to be very large. The bees take things more calmly, and proceed to enter the supers, many times, without thinking of swarming.

The second factor is the cold nights we have which act as a sort of damper to the warmth of the swarming fever. We often have a few days of cool weather which will frost the notion of swarming. But seasons do come when our bees are as bad as any, but I think they are more rare in the high cool altitudes.



BEE-KEEPERS AND THE PARCELS POST.

Even the most observing of citizens are slow to see the damper placed on our national progress by the withholding of that great human betterment, the parcels post. That which we do not see as a definite loss does not strike us as real; but even if we do not see what we are missing in prosperity by the lack of this reform, the loss is none the less real. The cost of expressing a gallon of honey from Denver to Kansas City is now about 75 cents. The cost need not be over 25 cents, and that would be three times the fourth-class freight rate.

The parcels post will make the selling of honey by mail order the most profitable way for the wide-awake bee-keeper to sell his honey. The consumers who are now anxious to connect themselves directly with the producer will be able to do so economically under the parcel-post method. Honey and other farm products will pass more directly from the producer to the consumer. This will effect a great national saving that will make us all richer. With the adoption of the parcels post I expect to see honey eaten

much more, and this will tend to give us a better price for a choice article.

These instances show that bee-keepers can not be too well posted on freight rates, classifications, and the proper way to ship honey. If the freight agent in the first case spoken of had been looking out for the best interests of his company's customers he would have told the bee-keeper how to secure the lowest possible rate.



THE POPULAR CONCEPTION OF HONEY.

One who works with honey, and is thinking of it a great deal, can hardly realize what people in general think of it when they see it in the stores or have it brought to their attention. There is one thing that has very agreeably surprised me, and that is the high regard as a food at which honey is rated. There is that flavor in the thought the word carries which suggests *par excellence* of sweetness. The word is the oldest one in our language for a sweet, and, being in use every day, is well advertised. This idea of quality that adheres to the word "honey" can not be maintained without a correspondingly higher price being asked than for other sweets. One of the very things that make people suspicious of the purity of honey is its cheapness. If honey in the comb or extracted honey in glass and tin could not be bought for less than twenty cents a pound there would be many more people who would have confidence in its purity. What we bee-keepers need to know is that pure maple syrup will bring \$2.50 a gallon; and is not a fine quality of honey worth as much? Maple sugar sells for 30 cents a pound in many stores in Denver now. Honey should come much closer to it in price than it does at present, though it is also true that a very fine quality of comb honey will sell readily at 20 cents per section.

Some of the readers of GLEANINGS no doubt read the article in February *Hamp-ton's Magazine*, "What has Become of our Pure-food Law?" by Samuel Hopkins Adams. Mr. Adams stated in the article that the markets of the country teem with honey that is mainly glucose. I wrote to Mr. Adams that I thought the facts must be overdrawn, as I had never seen any honey that I thought contained any glucose, out here in Colorado at least. He replied that he got his information from the reports of the State Food and Dairy Commissioners of Illinois and Minnesota.

Mr. Adams asked if it were not a fact that the low price at which certain low grades of honey are sold did not bear out his contention of adulteration. Now you see when a man like Mr. Adams sees honey advertised for five and six cents a pound, he, not being familiar with the methods of production, thinks pure honey could not be sold for so little, so it must be adulterated. If the low price we bee-keepers are getting for our honey casts the suspicion of adulteration upon it we should have the courage to raise the price enough to instill confidence at least.

Conversations with Doolittle

At Borodino

CONDITIONS WHICH INFLUENCE THE DEVELOPMENT OF QUEEN-BEES.

"I reared a few queens last summer, and was infatuated with the work. What are the conditions under which the *best* of queens can be reared?"

"Did you ever go to a colony which was preparing to swarm, Mr. White, and ask the bees how they reared queens so as to bring themselves all the way down, from creation to the present, in such good condition?"

"But, Doolittle, queens can not be reared in the numbers needed for market as the bees rear them for swarming purposes."

"Possibly not, under just the same circumstances, but we can come very near to it. Most of those who advertise queens for sale do the best possible to bring about the conditions needed, I think."

"A few years ago one of our noted men said, 'In a normal colony a queen emerges into an atmosphere of warmth and high humidity, and has accessible an abundance of nutritious and stimulative food.' Would that describe the condition in which queens emerge under the swarming instinct?"

"Yes, and it also describes the condition under which most queens emerge, when reared where an old queen is superseded by the bees during July and August, the time of year that supersedure occurs most often."

"And are queens reared under the supersedure impulse as good as those reared under the swarming impulse?"

"I have not found them inferior."

"Does the Swarthmore plan come under either of these conditions? I read in a paper purporting to tell what Swarthmore said regarding the little colonies in which he had his queens during the time they emerged from their cells, time of mating, and till they were sold or given to his own colonies, where he desired to requeen: He said that twenty-five bees will mate a queen. Fifty will do it better, but more than a small teacupful is a positive disadvantage. When I read that I said I was going to talk this matter over with you; and if you, who have been in the queen business for more than a quarter of a century, endorse this statement, then I was going into the queen-rearing business by putting a big advertisement into each of the bee-papers, splitting up part of my colonies into teacupful lots, when, by the pre-introduction plan, I could get a dollar queen from each teacupful once a week. As each colony would make from twenty-five to fifty such cupfuls for that many nuclei, I could make 500 or more nuclei from the colonies which I put into queen-rearing, and work the rest for honey. In this way I would more than double the results from my apiary each year."

"You remember what you quoted from

one of our noted bee-keepers, one having years of practical experience, about the conditions under which queens emerge in normal colonies. Well, that normal colony condition can not be obtained in any commercial queen-yard, subject to all of the changes of weather in your latitude and mine, with a teacupful of bees of any age; and I have been greatly surprised that some of our bee-papers should lend their influence toward baby nuclei and the pre-introduction of queens to such. I have tried the matter very fully, introducing to my own colonies the queens thus reared, so that I could prove this matter before I sent out any queens that might be a damage to those who purchased them, and the result proved that such queens did not come up nearly to the standard of those which emerge and were mated in nuclei having from three to six full combs, with bees to cover them fully, as has been my way for the past thirty years; so that all of this pre-introduction and twenty-five-to-fifty-bee baby-nuclei contraptions have been burned."

"But you did not tell why a normal condition could not exist with a cupful of bees."

"It is barely possible that it might in mid-summer, in a latitude like Florida and Texas, where there are no cool nights (if there be such a place); but with us who are not so favorably located, it is best to be sure that all of our queens have the advantages of the conditions in a normal colony which is about to make a change of queens. Based on many years of practical experience and close observation I find this: When a queen emerges from the cell she is far from being a fully developed insect. She is a white, soft, mushy thing, easily mashed and susceptible to cold and neglect unless held in her cell by the bees as in after-swarming. But in a commercial queen-rearing yard where only one cell is placed in a nucleus, or as in pre-introduction, where a cell is placed in a cage, queens are not so held, and these queens, just from the cells, need a high temperature and the humidity and nutritious food found in a normal colony. And by reducing this in any particular the perfect development is by that much retarded, and the queen is damaged in proportion to the reduction. Imagine, if you can, such high temperature, humidity, and nutritious food, in a little thin box out in a night when the temperature goes down from 38 to 50 degrees, with 50 bees to provide the same. Or in any of the pre-introduction cages provided with candy, as un-nutritious food for the queen, and wire cloth for her to snuggle up against, like a prisoner, which she is, instead of an escort of bees to fondle her, or the expanse of a normal colony to roam in. No, the man who is taking up space in our bee-papers by proclaiming the *improvement* of our bees by selection, by importation, by various crossings, etc., and at the same time advocates rearing queens by the pre-introduction and cupful-of-bees plan, is drifting out on an open sea, without chart or compass."

General Correspondence

STOCKING A BEE-RANGE.

The Problem of Overstocking; Various Causes of Annual Variations and Marked Changes in the Varieties and Quantity of Honey-producing Flora; is a Range Overstocked When the Surplus per Colony Begins to Decrease? Number of Acres Necessary per Colony.

BY OREL L. HERSHISER.

Continued from last issue.

Variations due to climatic conditions are familiar to bee-keepers, as nearly all have felt the effects of drouth and excessive rainfall. We of the North have also occasionally had our honey prospects nipped by frost. In the semi-arid regions, if there is insufficient precipitation in the mountains to provide the needed water for irrigation, there results a short crop of alfalfa honey. Perhaps there is no extensive region where the crop of honey depends so much on rainfall as do the sage ranges of California. So important, indeed, is rain to the California apiarists, that they forecast their honey crop with greater or less precision as soon as a certain number of inches has fallen. However, with some of them near the coast, clouds and fogs set their prognostications at naught.

Variations due to the hand of man are observable wherever the woodman's ax or the farmer's plow-share has operated to subdue the wilderness and render the soil fertile. In times past, excellent basswood locations were plentiful; but now, as the result of the rapid and constant utilization of basswood timber for lumber and other purposes, good basswood ranges are few and far between, and the source of this excellent variety of honey is fast disappearing. Often extensive areas of white clover, wild red raspberry, willow-herb, and other wild flowers appear of their own accord upon the land denuded of the basswood, along with other timber in the process of clearing the land, and, later, alsike clover and buckwheat are cultivated, and thus, usually, is there compensation for the loss of the basswood, for the soil on which it flourished is also adapted to the growth and development of these wild plants and the cultivated ones as well. Again, there are numerous locations, once good as sources of basswood honey, where later flourished wild flowers, and clover, and buckwheat, that have diminished greatly in value as bee-ranges because of the adoption by the husbandman of extensive truck farming, gardening, or the growing of cereals or other non-honey-producing plants as their main crops. On the other hand, many of the best honey-producing ranges in the semi-arid regions were worthless to the bee-keeper until the hand of man transformed the dry, brown, and often barren

wastes into blossoming fields of green and purple.

If alsike clover, buckwheat, or other nectar-yielding plant is found to be one of the main crops of a locality, this fact is significant as indicating that soil and climate are especially adapted to its perfect growth and development, and hence, acre for acre, such a location is more valuable as a bee-range than one where mixed agriculture is the rule.

Such variations as are due to the absence of uniformity in climatic conditions have comparatively little bearing on the proper stocking of a location, as we soon learn by observation and experience, and by consultation of the records of the weather service, what we may expect in the average season.

Those variations and changes that are due to the hand of man have a marked bearing on proper stocking; and if we would maintain the proper and most profitable ratio of bees to forage, readjustment of the number of colonies to the amount of flora will sometimes be required.

Measuring the area of some varieties of honey-producing-plants by the acre is attended with some difficulty. Basswood-trees, as a rule, occupy only a part of the space in the forest, the rest being occupied by other varieties of trees. Much of the goldenrod is found along fence-rows and in isolated bunches of greater or less area on unoccupied lands. White and sweet clover behave in a similar manner, occupying only such soils as are peculiarly adapted to their growth, and the same is true generally of all plants that flourish in the wild state. Necessarily the number of normal acres of such nectar-yielding plants on a bee-range (that is to say, the number of acres there would be if each variety grew on as small an area as possible and produced a vigorous growth and luxuriant bloom) can only be estimated.

The blossoming surface of plants that have a bush or shrub like habit is greater, by reason of its vertical extension than plants the bloom of which is spread out in a comparatively thin horizontal layer. This is true in a more marked degree of trees with spreading tops such as the basswood and apple, and especially where the growing areas are not crowded. Generally the blossoming area of plants depends upon the surface that is exposed to light and sun; and if plants grow thickly they will have a small blossoming surface, and *vice versa*.

It would seem that the matter of properly stocking a location is not so complex after all but that it may be accomplished within such limits as will leave a margin of inaccuracy sufficiently narrow as to be of small financial consequence.

As the result of the testimony of some of our brothers of the craft, and of my personal experience and observations, I should feel that I was fairly near the right point in stocking the location according to the following rules:

1. Wherever soil and climate are adapted

to the full development, both as to growth and nectar secretion, of one variety of first-class dependable nectar-yielding plant, or more than one, if their period of blooming is identical, one colony sufficiently populous to be a prime surplus honey-producer for each $1\frac{1}{2}$ normal acres of flora within $1\frac{1}{2}$ miles of the apiary will properly stock the location.

2. Wherever soil and climate are adapted to the full development, both as to growth and nectar secretion, of two or more varieties of first-class dependable nectar-yielding plants that flourish on the same range, and bloom in succession or at different periods of the season, each yielding honey of the same value per pound, and the same quantity per normal acre, one colony sufficiently populous to be a prime surplus honey-producer for each $1\frac{1}{2}$ normal acres of flora of the variety that flourishes in greatest abundance within $1\frac{1}{2}$ miles of the apiary will properly stock the location.

COROLLARY.—If the varieties of honey are of different values per pound or quantity per normal acre, the number of colonies should correspond with the number of acres of that variety of flora that will yield to the apiarist the greatest value.

Bee-keepers whose locations are understocked are allowing valuable resources that are right at hand to go to waste that could be economically garnered, for the reason that the appliances for running a fair-sized apiary are in a large measure sufficient for running one several times as large. It would seem to be the plain duty of the apiarist to stock his location properly if he desires to monopolize it.

Kenmore, N. Y., Feb. 9.

SPRING DWINDLING.

Longevity versus Pollen Substitutes.

BY SAMUEL SIMMINS.

Mr. F. Dundas Todd, page 122, Feb. 15, asks, "Is there a practicable method of giving a substitute for pollen inside the hives?" There are several, some of which he appears to have overlooked. Certainly he had an experience that would make him think hard on just that subject.

Mr. Todd gives a quotation from my 1904 edition, which is rather a condemnation than a helpful explanation of any plan of substituting artificial pollen in the total absence of the natural article. I have seen and known of so much harm being caused by candy fed in winter, and flour candy used at an improper season, that, until the above issue of my work, I had been very much in the same mind as the editor as regards offering various methods of supplying pea flour that I had tried over a period of more than thirty years.

But notwithstanding Mr. Todd found only four words referring to meal, I should like to ask him to take up that same edition of

the work referred to and cast his eye down page 36, where he will find directions for supplying artificial pollen in two forms inside the hive, close to the cluster. The best way that water can be supplied at the same time is undoubtedly by the means of warm thin syrup so placed that it will keep warm all the time.

If the weather should be fair when meal is given to the bees, then no harm can occur; but with a cold and sunless period my own opinion is they are much better without. Stocks have dwindled badly, just because flour candy had been supplied in early spring, and I have always tried to persuade my correspondents to discontinue its use at that period.

LONGEVITY AND STAMINA.

I have made a law unto myself, that, unless overtaken by disease, there should be no spring dwindling in any modern apiary where any sort of progress is claimed by the owner. His watchword should be *longevity* and *stamina*; and with these points gained he can defy dwindling and short honey crops. There is not even the excuse available that his bees have gathered a lot of honey-dew, as he can always feed enough pure syrup at the latter end, upon which the bees will then feed during the critical period, leaving the poor feed for use when they begin to move freely.

My own district is one that shows a great scarcity of pollen in autumn and spring, so that my stocks, nine years out of ten, winter without that desirable adjunct to their stores. Nevertheless, the bees frequently go from August until April without rearing the least patch of brood; yet I often get two and three frame nuclei (wintered as such) into swarming condition earlier than the established stocks wintered by many of my correspondents, even though they are blessed with an abundance of natural pollen.

The peculiarity of my district has compelled me to select my breeding stock so that workers hatched in August are found still active in May of the following year. So persistently have I bred for longevity that I believe no sort of ordinary neglect, apart from actual starvation, can cause these bees to dwindle; hence the necessity of early brood-rearing is not very important. I might even say its absence is an advantage, as progress is the more rapid when the advent of fair weather provides the necessary nitrogenous food. Possibly few owners have ever established stocks absolutely without pollen at the beginning of winter; but usually one comb would easily contain all I could find among 100 colonies.

In securing the quality of *longevity*, one is sure of obtaining almost every desirable point required in a good honey-getting strain. The stock of bees that loses the least number will always be strong in wing power, and, of course, they build up to full strength in half the usual time. Moreover, they appear to hibernate so perfectly that the stores show little diminution before brood is reared extensively. They require to fly but sel-

dom; and the almost total absence of dead bees before the entrance during winter is one of the most astonishing facts that result from breeding for longevity.

BEES STEALING EGGS.

Surely Mr. Frazer, page 108, Feb. 15, does not imagine any one can think fertile workers are responsible for producing a perfect mature queen. He should understand I implied fertile workers were responsible for the eggs found in queen-cell cups, *where no proofs could be offered that those eggs ever came to real queens*. His own experience goes to show that bees may sometimes steal eggs, though he perhaps does not realize that even his imported queen may quite likely have taken a flight, as many fertile queens do, and got into the wrong hive.

In the Feb. 1st issue, however, Mr. Pritchard appears to give a true case of bees stealing eggs. Not only were several queens reared different from those in any of the hives except one weak Carniolan lot, but when those dark bees were removed there was no further trouble.

Then we must conclude that bees do, once in a while, develop this remarkable propensity. But what was there to show that the same bees did not continue to appropriate eggs from some other Italian lot? This is a point the queen-rearer will have to consider seriously, for he will now require to keep his eyes open very wide indeed if he is to be sure he is securing young queens every time from his choice breeder.

Queenland, Heathfield, Eng., March 7.

A GLIMPSE AT THE CELERY INDUSTRY OF MANATEE CO., FLA.

BY E. B. ROOD.

At the request of Mr. A. I. Root I will say a word as to one of my celery-fields as illustrated by the engravings. The middle view represents the celery as it is growing in the field, the bleaching-boards having been taken down and the "cutters" cutting the celery for the "strippers," as they are called.

The upper view shows the strippers at work. They take off from the stalks all of the dead leaves and branches so that it is ready for the packers.

In the lower picture the packers are at work. We use in Manatee Co. a crate 12×18×24 inches, and this holds on an average about 3½ dozen bunches of celery. The field shown cut about 850 crates to the acre; and when it was sold it brought \$1.40 per crate, or \$1190 at the depot in Bradentown. The price went as high at times as \$2.20 a crate, f. o. b., but is now worth about \$1.00. I think it costs to raise an acre of celery, and market it, giving it the best possible attention, about \$400 to the acre.

The price of celery land is increasing rapidly, as many successful growers have paid for their lands in a single crop. But it requires lots of work to grow and harvest a

crop like this. If, however, we succeed in bleaching the celery with paper instead of boards, the work and expense will be greatly reduced. Many have tried paper this year, and I am expecting to buy a carload of paper for my own use next year.

Bradentown, Fla.

ITALIANS SWARM MORE THAN BLACKS.

Swarming of Italians and Blacks; Italian Colonies get Strong Too Early.

BY W. C. MOLLETT.

The past season I have had occasion to observe again the difference in the swarming of blacks and Italians when run for comb honey. It seems that most of the difference is caused by the greater prolificness of the Italians, which causes the hive to become crowded with bees very early in the season. This is rather a disadvantage, as the first swarm will swarm again in a month or less—something I have never known the blacks to do. Also, the size of the hive has something to do with swarming, as the bees will usually swarm much sooner in a small hive than in a large one. Some writer says that a large hive only delays but does not prevent swarming; but this seems to be at variance with the facts, as it has been proved that a hive that has a brood-chamber large enough to keep the queen busy for 21 days will not swarm nearly as soon nor as often as a smaller one. Of course, locality has something to do with it, as I am fully convinced that bees will swarm more here than they will in a region where the chief honey-yielder is white clover. The chief sources here are whitewood, basswood, and sourwood, coming in about two months' time, from May 15 to July 15. Neither flow lasts very long; but they excite the bees so that they will swarm early and often, especially Italians.

Some seasons I have known strong colonies of blacks to fail to swarm, but have never known the same thing to happen with the Italians in a normal condition. I do not think there is any question as to Italians swarming oftener than the blacks when run for comb honey; but when extracted honey is produced in large two-story hives the swarming may not be much of a nuisance. Some of the Swiss bee-keepers claim to have a non-swarming strain of the black variety; but in this case I think that the question of location must be taken into consideration. I am, however, firmly of the opinion that a non-swarming strain will never be developed from the Italians, and perhaps not from any other race; but I think that much greater chances lie in carefully breeding and selecting the blacks with the object of eliminating the swarming habit.

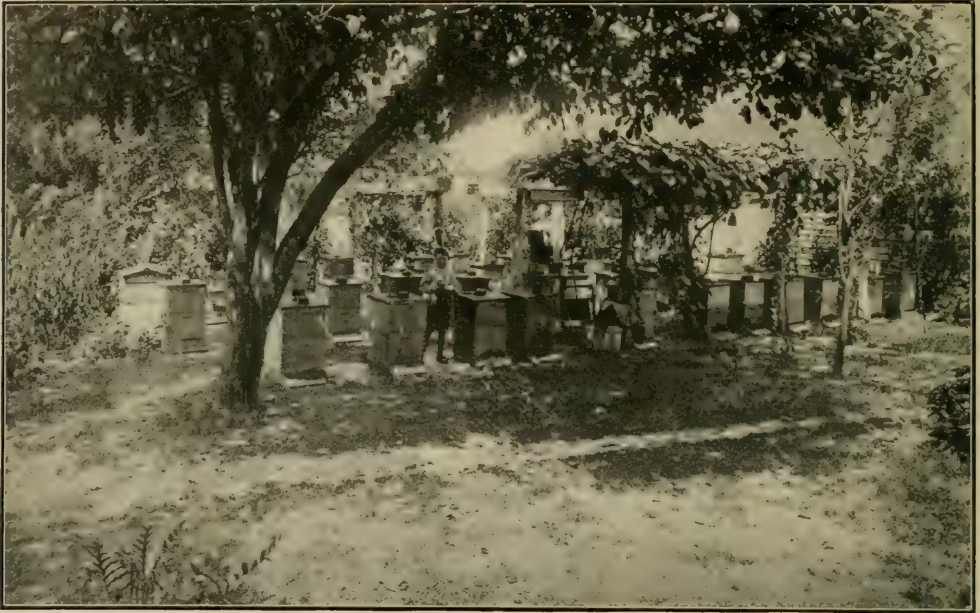
SOURWOOD AS A HONEY-PLANT.

This is a large shrub or small tree which grows on the high rocky parts of the Appalachian ranges and foot-hills. It blooms in



A CELERY-FIELD AT BRADENTOWN, FLORIDA.

The upper view shows the "strippers" at work—mostly colored women and girls. The middle view shows how they harvest the crop after it is grown. The lower view—packing the celery in boxes ready to load it on the cars.



GRAPEVINE TRELLIS FOR SHADE.

the early part of July, and continues in bloom for about three weeks, having a small white drooping flower. It is a very good yielder of extra white honey which is of a very thin nature, and does not granulate to any extent. On account of the favorable weather when it blooms it is one of the surest sources of honey where it abounds; and also on account of the trees being small and the wood of little value it is not liable to be cut off as close as whitewood and basswood. The honey has a somewhat stronger flavor than that from basswood, but is considered here as very fair honey, and always sells for a good price, as it is as white as or whiter than that from basswood.

Stonecoal, W. Va., Feb. 14.

GRAPEVINES FOR SHADE.

BY W. M. O'NEEL.

My apiary is located under a grapevine trellis for shade, as shown in the engraving. The posts of the trellis are set 8 ft. apart each way, boards $1\frac{1}{4}$ inches thick and 8 inches wide being nailed on each line of posts, and crossing each other at right angles by means of notches at the post. These project 30 inches on all four sides; 12 inches from both sides of each board is a galvanized wire, and on these wires and boards the vines are trained, leaving an open space for the flight of the bees between each four posts. This space, about 5 feet square, also lets in plenty of light and air.

This plan affords a good open shade, which is much better than the dense shade of the

apple-tree at one side, which is too dense on damp or cool days. The grapes pay me well for the expense and trouble. While the grapes were getting a start, the Kudzo vine, the flowering bean, and the tender moonvine gave excellent shade temporarily.

CONCRETE FOUNDATION AND ALIGHTING-BOARD.

The other engraving shows a close view of one of my hives under the trellis. This hive rests on a concrete slab for a foundation, which I find cheap and serviceable. These slabs are made with a hinged mold, and are two inches thick. They are half an inch narrower than the bottom-board and six inches longer, the extra length being tapered down to a thickness of half an inch at the front end, making an excellent alighting-board. When these slabs are leveled on good solid ground they stay in place, and do not sink down nor get out of level. They are reinforced both ways with old barbed wire. The expense was not over 15 cts. each, including my time for making.

Dupont, Ind.

A VISIT WITH HAWAIIAN BEE-KEEPERS.

BY E. F. PHILLIPS.

It was the writer's privilege during the winter of 1908 to visit the Territory of Hawaii and to meet the bee-keepers of the islands. These islands, which form one of our outposts, are, from a bee-keeping point of view, of exceptional interest. The methods of management, the honey sources, and the tropical conditions under which the work is

carried on, are things entirely new to one who has studied bees only under our mainland conditions, and there are many things to be observed there which will probably interest other commercial honey-producers.

The area now covered by apiaries does not equal Rhode Island in size, nor is all the available area as yet covered. The bee-keepers are at present extending their operations, and it will be but a few years before they make a larger showing. They have already shown that they are progressive, and their methods of management are thoroughly modern.

While there is a season during which there is less honey coming in, there is no definite honey-flow such as is found in most places on the mainland. On the contrary, there is something coming in almost every day in the year. As a corollary the flow is not so intense but the bees keep right on at a moderate rate adding to their stores. The old tradition that bees in the tropics do not store excess honey is certainly disproven by results on the islands.

The main floral honey source is the algaroba-tree, closely related to the mesquite of the Southwest. The honey is white, and granulates rapidly, resembling most our alfalfa honey. During the spring and early summer (if we can designate seasons in such an equable climate) the bees work vigorously on the algaroba. The most interesting

phenomenon, however, is the second large honey source. The bees of the islands annually gather tons of honey-dew honey from the secretions of the sugar-cane leaf-hopper. Such an extensive gathering of honey-dew to form a commercial product is a thing which is unknown to the writer in any other locality. This honey-dew honey does not resemble the honey-dew honey generally found on the mainland. It differs in flavor, and, when relatively unmixed with floral honey, does not granulate, even after a period of years. This product is sold as "honey-dew honey," and finds a ready market among bakers. It could not be used as a table honey, and the producers make no effort to use it in competing for that market. Since leaf-hoppers are always present in numbers on the cane, the flow from this source is practically continuous. During the algaroba flow, or when other nectar-producing plants are available, the bees prefer the floral nectar.

According to the decision of the Pure-food Board, the product made by the bees from the secretions of insects may be sold as "honey-dew honey." It is a natural product gathered by the bees, and unmixed with any added sugars. Since there is a market for this product there is no reason why it can not be sold provided it is so labeled that the buyer knows what he is using.

A point of considerable interest in Hawaiian bee-keeping is the fact that there are few small bee-keepers and almost no amateurs on the islands. Bee-keeping is a commercial industry, and most of the bees are owned by corporations. By such organization one competent bee-keeper can superintend the work with several thousand colonies, the actual manipulation being done by laborers. This reduces the cost of production, and such a plan seems to foreshadow the future of mainland commercial apiculture.

The Hawaiian bee-keepers are extremely fortunate in that they have among their bees no contagious disease. Either American or European foul brood would cause enormous losses under such tropical conditions, and it is to be hoped that effective quarantine regulations may be established to prevent the introduction of these plagues which annually cause so many thousands of dollars' loss on the mainland. Steps have already been taken in this direction. It is doubtless true that the bee-men of Hawaii would control a contagious disease as good bee-keepers do elsewhere; but if they can prevent the introduction of the causes they will be relieved of much troublesome labor.

Aside from these special features, Hawaiian bee-keepers face the same problems as do their mainland co-workers. They are good examples of what a progressive bee-keeper



CONCRETE HIVE-STAND AND ALIGHTING-BOARD.

should be, and should have the cordial co-operation of the mainland leaders in apiculture.

Washington, D. C.

TRANSFERRING FROM AN OLD STUMP TO A MODERN HIVE.

BY CHARLES M. KOLB.

The engraving shows an oak stump and a Danzenbaker hive, representing the old and the new home of my bees. I found the colony in November, during the gunning season, and in February found that they had wintered well. Up to this time I had never handled bees nor seen a hive, except at a distance, but I wished to take them home; so I tacked a piece of wire cloth over the hole in the stump, and cut off the trunk of the tree above the hollow part. I then sawed off the stump close to the ground, turned it over and tacked a sheet of tin on the bot-



COLONY TRANSFERRED FROM A STUMP INTO A MODERN HIVE.

tom. After hauling it home, a distance of four miles, on a wagon, we placed it in the yard on a flat stone, and removed the wire cloth from the entrance. The next day being warm the yard was full of bees.

Later, my friend and I sawed the stump in two, took the combs out and filled six of the Danzenbaker frames with brood and honey, tying them in with string. We placed the hive where the stump had stood. For three days and nights the bees worked cleaning house and making repairs, removing dead brood and rotten wood.

We found that we had the hive located too close to the sidewalk, so we moved it forward three feet every day, and on the fourth day we reversed the entrance so that it faced the old location. In all, we moved the hive 75 feet to the rear of the yard and the bees followed it without any apparent concern. Occasionally one would drop to the old location, circle around, and then shoot into the hive.

Haddonfield, N. J.

DO HONEY-BEES PERFORATE THE NECTARIES OF FLOWERS?

BY JOHN H. LOVELL.

Mr. Root:—After reading your comments on page 214 I am inclined to think that you are right, and that there is at present no satisfactory evidence of *honey-bees* perforating the nectaries of flowers. I would use the term "nectary" in a strictly technical sense; for, as I will show, honey-bees do pierce succulent tissue. Perhaps they have not sufficient strength to puncture the walls of nectaries, which are frequently tough and thickened. I have been unable to find any reliable records of honey-bees biting holes in flowers. In one instance, as mentioned in my paper, I observed a honey-bee apparently attempting to puncture the spur of the touch-me-not; but it is not all unlikely, as you suggest, that there may have been already a small hole, which it was seeking to enlarge. The holes were, however, undoubtedly made by bumble-bees, for the beetles and spiders seen in the flowers were far too small and few in number for this purpose. The number of flowers with the spurs punctured was very large.

On the other hand, there is not the slightest reason to doubt that bumble-bees frequently puncture flowers. They have been seen to do so by many observers besides myself, as Mueller, Knuth, etc. In the case of the scarlet runner, the flowers were visited only by bumble-bees and honey-bees, and were promptly punctured as fast as they matured. If we exclude the honey-bees, there were no other insects present, except the bumble-bees, which could have done this work. Wasps do not visit these flowers since they are short-tongued insects, and the nectar is inaccessible to them. While wasps can masticate other insects, I have never read of an instance of their puncturing flowers. In all the other cases mentioned in my paper the bees referred to are bumble-bees.

I have just examined the maxillæ and mandibles of a worker of the honey-bee under the compound microscope, and compared them with the same mouth-parts in a worker of *Bombus terricola*. While they are essentially alike, smaller differences can be easily discerned. The lacinia of the bumble-bee appear narrower, more rigid, and more acutely pointed, while its mandibles are toothed at the apices, and those of the honey-bee are entire. Still if the honey-bee is strong enough I should think it might be able to puncture floral leaves; but this is perhaps the difficulty—it is a less powerful insect than the worker, and not to be compared with the queen bumble-bee, and it probably has not sufficient strength to puncture nectaries. The maxilla of a bumble-bee or honey-bee is composed of two joints—a basal part called the stipes or stipe, and a blade-like terminal part called the lacinia. According to Mueller the lacinia are sharpened at the ends for the purpose of

piercing succulent tissue. Now, while the honey-bee may not puncture nectaries, it certainly does pierce with the laciniae succulent floral tissue.

There are a number of plants which produce succulent tissue instead of nectar into which bees and lepidoptera bore for sap. In the common laburnum (*Laburnum vulgare*) there is a round fleshy swelling at the base of the standard (a large, upright, showy petal well shown in the sweet-pea), which bees and butterflies pierce for the abundant sap. There are also several species of orchis (*O. morio*, *O. maculata*, etc.), in which Darwin, though he examined them repeatedly under the most favorable conditions, was never able to find "the smallest bead of nectar." Sprengel called them "sham-nectar producers." But the inner membrane of the flower-tube is a very delicate structure, and beneath it there is a copious supply of fluid. Mueller observed a honey-bee pierce this tissue a number of times. "On June 13, 1870, a hive-bee flew before my eyes into a flower of *O. latifolia*. It pierced the inner wall of the spur several times with the points of its maxillæ, and then flew away, bearing the pollinia on its head to a flower of *Lycnis flos-cuculi*. I gathered the flower immediately after the bee left it, and found the punctures visible from the outside as small bright elongated specks."

The flowers are more frequently visited by bumble-bees, which also puncture the tissue. "It is certain," says Mueller again, "that the bees pierced the delicate inner membrane and sucked the included fluid. They doubtless pierced the tissue quickly and easily with the points of their maxillæ." Mueller's observations are confirmed by those of Darwin.

The ability of purely suctorial insects to pierce plant tissues is much greater than is generally supposed. Darwin tells of a moth in Queensland, Australia, which with its wonderful proboscis can bore through the thick rind of an orange. At the Cape of Good Hope the moths and butterflies are said to do much injury to peaches and plums by puncturing the unbroken skins. Darwin also observed a fly (*Empis livida*) pierce the tissue of an orchis. The boring for sap among insects, says Mueller, is much more usual than was formerly supposed.

I have examined a great number of perforations in flowers belonging to various species, and would divide them into two classes—those made by the mandibles, and those made by the laciniae of bees. When the nectary is larger, as in the columbine, two small holes will often be found side by side, made, I believe, by the pinching of the mandibles together, unless each lacinia is capable of making an independent hole. But when the nectary is smaller and linear, as in the touch-me-not, there will be found a narrow slit made by the ends of the maxillæ. Very likely these latter organs are also used on the larger nectaries also. During the coming summer I hope to determine the exact behavior of both bumble-bees and hon-

ey-bees in regard to puncturing the nectaries of the scarlet runner. It would seem as though bumble-bees, being the stronger insects, especially the queens, make the holes, and that the weaker workers of the honey-bee observe and make use of them.

Waldoboro, Me., April 6.

SWARMING CONTROLLED BY REMOVING BROOD.

BY LEO E. GATELY.

While it is by no means impossible during a good year to double a given number of colonies, and at the same time obtain an undiminished amount of surplus honey, many wish to avoid increase, and in all large apiaries it is necessary to control the tendency of the bees to swarm.

By keeping the force of colonies intact throughout the season, it is not infrequently supposed that they can be kept in ideal condition for working in section supers. Not only is such a supposition only partially true, but to prevent such from swarming, it is at the last usually necessary to deprive them of all or most of their brood by shaking or otherwise.

There are methods whereby, with small labor and without so much as ever seeing a queen, swarming can be readily kept under perfect control.

Two or three weeks before the flow, or sooner if there is danger of swarming, a third section, filled with sheets of foundation, is placed between the two divisions of my brood-chambers. A week later the bees are smoked out of the upper brood-section, and it is replaced by a super. In another week the lower section is removed, and replaced by one containing foundation or empty combs. If needed, a second super can at this time be inserted.

Any plan that rids the hives of all brood kills swarming as effectually as though it had occurred naturally. As described above, it is taken so gradually that the bees do not become dissatisfied and sulk, and there is left at all times sufficient young larvæ to prevent swarming out, as frequently happens with shaken swarms.

With deep frames, as soon as the hive is filled with bees, a second story, usually consisting of one or two sections of my divisible hive, according to the strength of the colony, is placed above. Immediately upon the occupancy of this second story by the queen it is removed to a new stand, and the old brood-nest supplied with a ripe cell.

The return of old bees from the hive placed upon the new stand so depletes its force that all danger of its swarming is removed should it be kept for increase. Now, by placing an excluder under the second story ten days previous to making the division, the old brood-nest is absolutely prevented from swarming, as by that time there will be no larvæ left of a suitable age for starting cells. Usually, however, such precautions are un-

necessary if sufficient super room is given the old brood-nest. By either plan there is absolutely no handling of frames, and the apiarist is independent of any whim of the bees as to their swarming. In a large apiary no professional honey-producer would at the present day think of allowing natural swarming, uncontrolled; and the above methods will especially meet the requirements of all those who wish to avoid the discomfort of watching for even first swarms.

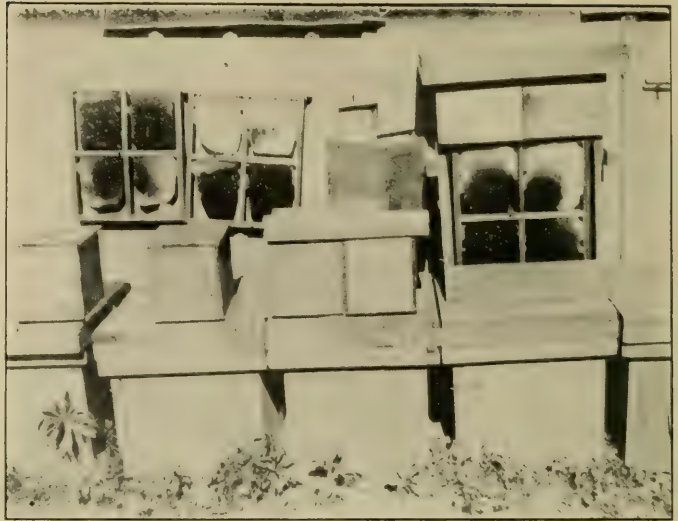
Ft. Smith, Ark.

THE TWO-POUND SECTION OF FORTY YEARS AGO.

BY H. R. BOARDMAN.

Years ago, although I had been using movable-frame hives, I had as yet nothing better than mere empty boxes for my surplus comb honey. I began trying to find something more convenient and more elegant, and the sectional honey-frame was the outcome of my thought. I used these for all of my comb honey for several years. They were plain nailed frames of such a size that four of them would fit in one of my large deep brood-frames. They were prepared with plain wax starters, and were tiered up in a regular hive-body over a brood-chamber. These were quite an improvement, and the best in this line that I had then found. A box to hold the set of sections soon followed, which also proved to be very practical. I made a few of these at first, and soon afterward ordered material for a large number. The interchangeable feature proved valuable in many ways. Four of these boxes covered a hive, and the sections held from 1½ to 2 lbs. of honey each.

I do not think that I ever produced finer honey or secured better crops than I did in these original sections; nor have I been able to make my business pay any better than it



TWO-POUND SECTIONS AS USED BY MR. BOARDMAN FORTY YEARS AGO.

The small boxes are nucleus hives for queen-rearing, in which these large sections were used as frames.

did then. My first shipment of comb honey was in these sections, for, of course, I had then never heard of a section that would fold, of comb foundation, nor of separators. Well, I shipped 300 lbs. to W. P. Southworth, in Cleveland, at 25 cts. a pound. This looked like quite a deal to me then. But the honey was reported in bad shape, as it was broken in transit, so that I had to take 20 cts. I have often thought since that I would not consider it a great misfortune now that would compel me to accept 20 cts. a pound for my honey.

When the queen got up into the upper part and used these sections for brood-rear-

ing, the idea of putting these small combs in the boxes and using them for nuclei was at once suggested. When the queen which had been placed in the nucleus hive became fertile and commenced laying, the sections were slipped back into the frame, which frame, with the bees and queen, was put into another hive that contained no queen. For several years I raised queens for my own use, and also a few for my friends, making use of these "baby nuclei." This was only a side issue with me, however, as I was not a professional queen-breeder and never have been.

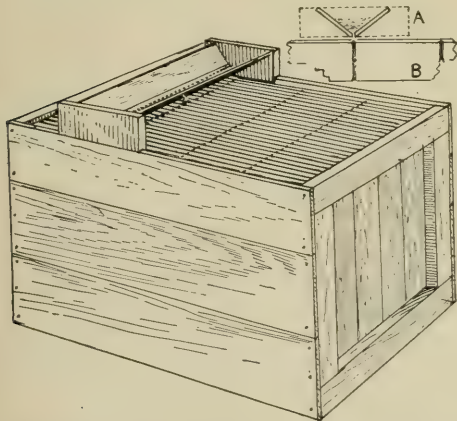
Last summer I brought these fixtures out from the dust and cobwebs of the shop attic, and used them again as I did nearly forty years ago. The illustration shows the small nucleus hives and the manner in which the sections were inserted in one of my large frames. The removable side of one of the hives is also removed, showing the sections of comb honey and also others used for brood-rearing.

Collins, Ohio.

A SECTION-DAMPENER.

BY WESLEY FOSTER.

We have used all sorts of things to dampen our sections, from a dipper to a syringe; but this trough arrangement does the work better than any thing else we have tried, and much more quickly. The sections are left in the crate, and the perforations in the bottom of the trough are made the same distance apart as the grooves in the sections,



approximately one-sixteenth inch. Warm water is used; and when one row of grooves is wet, the trough is moved over to the next row. The trough would work somewhat better if the sections in the crate were all turned one way, then every groove would be almost certain to be dampened clear to the bottom of the crate.

Water is used pretty freely, and it is best to dampen the sections several hours before folding them, so the water not absorbed will

run off, and the sections that get a too generous wetting will have time to dry out a little.

Boulder, Colo.

[This scheme for dampening sections would be all right, but we should think it would not work much further than a single row deep.—ED.]

IS A NON-SWARMING RACE A POSSIBILITY?

Is the Swarming Tendency Due to Habit or Law?

BY DR. A. F. BONNEY.

If for no other reason than that some of my bee-keeping friends might be happy, I hope the dream of a non-swarming strain of bees may become a reality; however, the more I think of it the more doubtful it appears.

There has been very much written on the subject, I know. I should not be surprised to learn that the ancient Egyptian bee-keepers voiced a wish—but, wait! "It is not our knowledge but our ignorance of the past which constitutes the pride of the present." so perhaps that old-time folk knew more about bees than we do. They trained cats to go into the water to catch fish, though now Puss has a fit if she gets her dainty feet wet.

The first question which comes to my mind when I get to discussing this question is: "What is swarming?" It is not atavism, for that is merely a reversion to ancestral characteristics, a returning to shape, color, or other physical characteristics; nor is it instinct, for that is a special innate propensity in any organized being, but more especially in the lower animals, producing effects which appear to be those of reason and knowledge, but which transcend the general intelligence and knowledge of the animal. Intuition is entirely an unconscious mental process, so it is not that. It is not heredity, for that is almost synonymous with atavism, the transmission of mental and physical characteristics from parents to offspring. I believe this was fully understood by the old philosophers. "I will visit the iniquities of the fathers upon the children, even to the third and fourth generation of them that hate me."

Dr. Jones, in advertising his non-swarming discovery, alludes to the "swarming habit of bees." But is it a habit—a usual or customary mode of action, something which may be acquired and afterward laid aside? "Habit," says the dictionary, is "a mode of action established by use so as to be entirely natural." It would really seem that the definition would apply to this characteristic of the bees; however, the word does not seem to fit entirely, so I ask again, and in all seriousness, "What is swarming?"

In time past, many things were believed which we now smile at. That the lion would not touch the true prince was as implicitly believed a few generations ago as is any church dogma to-day. The world was

flat; slavery was a divine institution. Shall we in another generation look back at the idea of a non-swarming strain of bees and smile indulgently? That many bee-keepers long ardently for such a thing, and believe it possible, is not evidence, logic, nor reason. Consequently we are free to discuss the matter fully and freely.

What is swarming? It is something which is to the bee what family-forming is to human kind? That the young stay and the old go from the hive, and the young go and the old stay in the human home is only a different way of obtaining the same result, if, mind you, we may argue from man to bee and bee to man. Swarming, then, is not a habit with the bees any more than it is a habit for the young couple, impelled by love, to go, gladly and unafraid, into a new world and to a new home. Unsex them and they would not mate and leave the home. No: swarming is not habit; it is law, a part of the sexual plan of the bees. It may even be that the almost sexless workers take this way of mourning their lost queenhood. It is law; and he who violates God's law perishes. Do the bees commit such a violation when they fail to swarm? There are men who do not marry, and there are bees which do not swarm. Let us suppose there were no marrying (a condition said to exist only in the other world); how long would the human race exist? Suppose all the honey-bees in the world were to die save one swarm (a not impossible idea), and that these, for any of many reasons, failed to swarm, and that in the dead of winter the queen died. The unfortunate insects could not fulfill the law, and they would perish utterly; and no one may ever know how many types of animals, birds, and reptiles have become utterly extinct from inability to comply with the law of propagation of kind.

By breeding, selection, we influence the shape, size, color, and even the disposition of the lower animals, and to some extent the characteristics of the insects; but in working with the chickens, if we keep the pullets shut away from the males the eggs they lay will not be fertilized; and if this were persisted in the chicken family would soon vanish. God cursed Onan. Lot's daughter knew the evil of non-swarming. In olden times a barren woman was despised, for perpetuation of kind was a law highly esteemed before these days of swift and easy divorces and race suicide.

Thus it will be seen that, when we take up the study of the exact meaning of words, habit is not the one to apply to the swarming of bees. Rather it is a law peculiar to them. Humans migrate, and that is the only human act which bears any relation to swarming.

It is, I think, permissible to discuss this matter. Were it possible for us to get the queen to mate in the hive, or to have two or more queens in the hive until a new swarm were ready to fly, we might have some hope of creating a non-swarming strain; but we can not; and to attempt to we must upset,

not a habit of thousands of generations of bees not to go contrary to instinct or inherited traits, but law, and one of the fundamental rules of their being. However, there is nothing in the economy of the human to compare with this law of the little people; hence we can have no conception of their mental processes, *if* they have reasoning faculties as sometimes seems. Having nothing but subjective evidence it is a question if man will ever be able to reduce this tendency to swarm; for, consider keeping a swarm of bees in a hive, room, or cave, five, ten, or even fifty years without swarming is not evidence that we have destroyed the tendency to do so. It merely means that we or our environments have put the bees into a condition where it is not necessary for them to swarm. They probably had more comb than they would ever fill, and simply went on superseding as the age of the queen required. Moreover, it is very likely that in cave or house room there were more than one "swarm," two or more queens. This is reasonable from what we know. Even if we did keep a lot of bees as above described for scores of generations of bees, is it not a fact that, if they were placed in normal surroundings again, crowded for room with a big honey-flow on, they would at once swarm? They certainly would, for *they are wild by nature*. Man has never domesticated them. In all the thousands of years he has been handling them he has not made a start to tame them or bend them to his will. Give a swarm the nicest hive, with every thing an honest bee might reasonably be expected to ask, and when they come to swarm they will leave the yard, seeking a dirty rotten tree, even though there were a dozen empty hives in the yard they left.

I have expressed the opinion that a certain method of preventing swarming might be used to overcome slowly the tendency of bees to swarm. However, I now think, and I believe time will prove the correctness of my conclusions, that even with that carried on for scores of generations of bees they will swarm just as soon as they get from under man's control, because they *are* wild by nature. They were created so, or developed to be. They are impelled by a law of which they have no knowledge and which they have no wish to violate. It is a part of their sexual plan, just as home-making or family-forming is part of the human plan, of which the young folks have no knowledge. They only know they are in love, but that is quite sufficient.

A man came to me once with an invention. He proposed to wind a rope on a shaft. At the rope's end was a weight, which, falling, unwound the rope and thus gave power to do work. He found in time that the falling weight would lift less than the man could lift in winding up the rope. Many of my brother bee-men are trying to develop a strain of non-swarming bees with the idea that they are dealing with a *habit*. Are they?

Buck Grove, Iowa.

AN ANTI-SWARMING DEVICE.

Additional Clustering Space Furnished without Altering the Hive or Otherwise Changing the Equipment.

BY WALTER S. POWDER.

Through the courtesy of Mr. H. Junge, of Cumberland, Ind., I am submitting his description of a new device which can be added to any hive, thus making it a non-swarming hive. To get an idea of the construction, just imagine a super filled with fences, using narrow cleats on the fences to maintain a three-sixteenths bee-space. The device can be arranged at the entrance, or it can be placed beneath the brood-chamber of any hive. Mr. Junge informs me that every experiment has been a success thus far.

We have long known that a very deep entrance to a hive would do much to retard swarming, and Mr. Junge has taken advantage of this idea, but at the same time permitting an abundance of ventilation, which is very important during a honey-flow. Personally I should prefer placing the device beneath the brood-chamber, and it has the advantage of being inexpensive and very neat.

Indianapolis, Ind., Dec. 1.

[The following is Mr. Junge's description of his device.—Ed.]

The patent application on my device was worded so as to cover it whether attached to the hive above, below, or at one side of the brood-chamber. I am not yet certain where it should be located. Fig. 1 is a bottom view of the device, arranged to be placed under the brood-chamber. This was the construction that I first thought of. For a trial it was placed under an eight-frame brood-chamber, the colony in which was cluster-

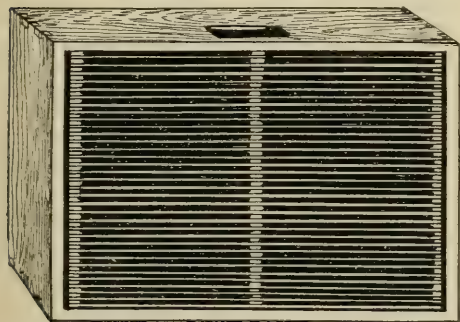


FIG. 1.—Junge's anti-swarming device arranged for placing under the brood-chamber. Patent applied for.

ing out heavily, and, to all appearances, was ready to swarm. Shortly after the change was made, the bees stopped clustering on the outside of the hive, even during the hottest days, and showed no further inclination to swarm. This colony made a better showing than most colonies in this neighborhood.

Fig. 2 shows another form of the device, designed for attaching to the front of the hive. If this will do the work as well as the one under the brood-chamber I am inclined to believe that it is the better construction

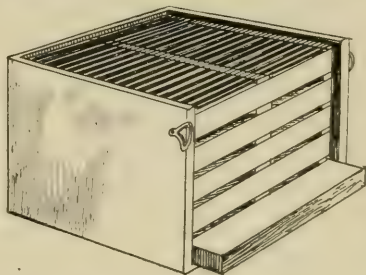


FIG. 2.—The anti-swarming device for use in front of the hive.

of the two for the following reasons: It can be much more quickly attached than the construction shown in Fig. 1, and there is no necessity of using smoke or otherwise disturbing the bees. It may be left on the

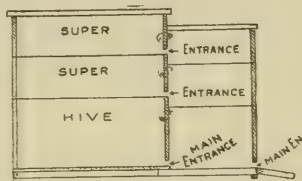


FIG. 3.—A provision for use with plural entrances.

hive permanently. It is separated, of course, from the hive proper by the front wall of the hive, so it could not possibly make it more difficult for the bees to keep warm in winter. It will also, to a certain extent, check sudden changes in temperature. Furthermore, those who prefer plural entrances can adopt this plan very easily; for with every comb-honey super put on the hive a corresponding slatted super of like height can be put over the anti-swarming attachment, as shown in Fig. 3. In this way there are plenty of entrances, but still there is no chance for a draft, and there is, besides, but one main entrance for the bees to guard.

Cumberland, Ind.

VENTILATION TO CURE SWARMING BY THE DR. MILLER PLAN.

Is the Cure Worse than the Disease?

BY O. B. METCALFE,
The New Mexico Chap.

Dr. Miller discusses "ventilation to prevent swarming," p. 691, Nov. 15, 1909, and the editor calls for reports. This question of ventilation is no new thing with Dr. Miller, and he has had me trying it, more or less, for the past three seasons. In a way, I am now about to turn against his plan.

Experiments and observations have convinced me that swarming may be much reduced by ventilation; but let us go slow with this method of swarm control, lest we blindly administer a remedy which is worse than the disease. for I have also noticed that a colony which is given as much as a $\frac{3}{8}$ entrance seldom stores the surplus that one does when kept well shaded and left on a $\frac{3}{8}$ entrance throughout the season. Now, the question I am raising is, "How does ventilation prevent swarming?" If I understand the swarming impulse, it is *incited* by the bees filling their hive with honey and brood, while conditions continue favorable for rapid brood-rearing, and is *checked* either by giving the colony more room or by stopping the queen in any way from laying at her best. Now, ventilation certainly does not add room, so perhaps it retards egg-production, and I think I have been able to note that it does. Who knows for sure? Until I know more about it I shall restrict ventilation experiments to a few hives, and give the most of my bees store room and brood room. When they will not make comb honey they may make extracted; and when a colony gets the swarming fever so badly that it won't stay at home, even to make extracted honey, it shall have a nice young queen, unless I desire increase in that particular yard.

Mesilla Park, N. M.

[This is a live and important subject. We should be pleased to hear from others.—ED.]

IS THERE A "BEST BEE" ?

Have the Italians been Given too much Credit?

BY D. M. MACDONALD.

I have been a student of American bee literature for about twenty years; and during the last dozen of these, little if any thing has escaped my eye. The feature of all others which has impressed itself most on my mind is the all but universal cry in favor of Italian bees. The pean of praise runs something like this:

"I have foul brood in my hives. What can I do to rid myself of it?"

"Get Italians," is the prompt reply.

"Wax-moth troubles me a lot. What is the best cure or preventive?"

"Italianize your bees, getting rid of the blacks," comes the inevitable answer.

"My bees seem to be working into scrub stock. What can I do to energize them?"

"Purchase Italian queens," comes the advice sure and quick.

"My bees are so vicious that working among them is becoming a terror to me. What would you advise me to do?"

"Get Italians, and you can handle your bees as if they were flies."

Now, my object in noting all this is not to rail against Italians. They must be good bees in America and for America; but I ob-

ject to having it so reiteratedly dinned into our ears that they are the *only* bee, and that all other races are anathema.

A good many years ago I put in a plea for blacks, and recorded some twenty points where, in this locality, they took precedence of their cousins. You were good enough to extract some of my points and reprint them in GLEANINGS, but with some remarks added which read very much like a point of interrogation after each. Four of them were similar to the quartette I have named in my opening sentences. I will deal with each.

Moths are at times an undoubted nuisance. In your A B C you give Italians as both a preventive and a cure. I raise no question of your correctness; but I do to the fact that you confine the extirpation to the influence of one class of bees. I may point out the fact, on the other side, that during over twenty years I have never had a comb mutilated by the depredations of wax-moths, either *Galleria* or *Achroia*; nor do I know of *any* bee-keeper, who attends to his bees, who gives even a passing thought to this at times deadly enemy. Yet all over the three countries—England, Scotland, and Ireland—the blacks stand in the ratio of 80 per cent to 20 per cent of all other races. The secret of immunity, therefore, does not lie in the possession of Italians. You will find it on page 165 of "Cowan's Bee-guide," last line. "If hives are kept strong in bees the wax-moth need not be feared." I do not claim a monopoly of this wisdom for this side of the Atlantic, because if you turn up Quinby (1866), page 244, you will find that he italicises the fact that "only when we know that all our stocks are full of bees" are we safe from the incursion of this troublesome pest. Then we are immune whatever the race of bees may be.

If we have had one (so called) fact more than another emphasized over and over, it is that Italians can cure foul brood. I know that they have brought the fell disease both to myself and others, but I have yet to learn that they are any more preferable than our own blacks in warding it off or aiding in effecting a cure when it finds a lodging in any apiary. GLEANINGS, as consistently as any other American journal, has extolled the virtues of Italians in working a cure; but I note of late that its editor is taking broader views, as on page 89, where he says, "It is possible that, in certain localities, there is a strain of blacks that will resist the plague as much as or more than the Italians." That is just my contention. Dr. Miller, p. 100, gives corroborative evidence: "Any extra immunity is derived, not from the fact that they are Italians, but because of their extra vigor. If you get that same vigor in any other bee you will get the same immunity." Our blacks, I maintain, have that vigor, and so have the well-bred queens of the same race reared under proper management in Germany and Switzerland. In very few countries has foul brood been put under subjection more completely than in the lat-

ter country, and, working for its suppression, their inspectors find black blood no detriment. Of the two races, the preponderating vote would be in favor of blacks.

Perhaps all bees have a tendency to revert to scrub stock at times; but of the three or four chief races, blacks are that way the least inclined. Take Carniolans, Italians, or Caucasians, and what a fight there is to keep the stock pure, with even a moiety of blacks in the neighborhood. Does not that prove blacks to be the predominant race? In a very few generations all the golden color vanishes. Here the Italians are a "soft" race. Just recently you yourself said of yellows, "Experience shows that bees bred for color will not stand as much cold as the dark strains that appear to be more nearly the normal type of the race." Mr. Byer has repeatedly spoken a good word for the darker races, and in the February *American Bee Journal* he says that, for "good wintering and for brood-rearing in the spring under adverse conditions, Italians are simply not in it." My own experience is certainly in favor of blacks building up and keeping up their strength more uniformly than any other race, and they *don't breed untimely*; consequently a smaller colony will yield a larger surplus. Given a batch of young black queens and a like number of Italians, the weeds in the last lot will number three to one of the others. While we get more powerful individual stocks of Italians than blacks, yet all over an apiary a higher percentage will be scrub stock, and far more stocks will be found queenless from no apparent cause.

Much has been written on the subject of vicious bees. No race is gentler and more equitably tempered than Carniolans, under almost any conceivable set of circumstances. Some Caucasians are gentle, but others are the reverse. All agree that Cyprians and Holy Lands are about as cross in general as bees know how to be. Italians (and, as a rule, the first cross) are found on the whole to be thoroughly amenable to manipulation in this country; but further than that we had better not inquire. Italians, on first opening the hive, cling to the comb and appear quieter than blacks, which appear more excitable; but as the manipulation goes on, give me the blacks almost every time. Moses Quinby describes this trait: "I can often avert a black bee in time to prevent a sting; but he must be a skillful swordsman who would thus parry the lightning thrust of the Italian." A writer on page 109, *GLEANINGS*, says, "The crossiest colony we have are yellow Italians, and the gentlest are dark hybrids."

For comb-capping and high finish of section honey the blacks are unexcelled. They are excellent nurses, fairly prolific, not given to excessive swarming, admirable defenders of their hives, thoroughly suited to our variable climate here, splendid winterers, raise brood only in season, and are long-lived; and they *do* resist the wax-moth and aid us in curing foul brood; are gentle to handle, and

keep up their vitality, thus avoiding scrub stock.

Banff, Scotland.

[Our correspondent has made an exceptionally strong plea in favor of the black race, or at least that race as it is found in Europe. If any other correspondent or reader has found the black bees are better for his purpose, and has hesitated to say any thing about it because he thought the editor might be prejudiced, we desire to say to him right here and now that our columns are open to further discussion of the subject. If we are prejudiced in favor of Italians it is because the great majority of the American bee-keepers are in the same boat. It is possible and even probable that local conditions have shown that the Italians are better than the native American blacks. We say *American* blacks, because, apparently, the English bee is superior.]

The great preponderance of this dark race in "Merrie England" may be due to the fact that a very large number in that country do not use the modern frame, but the old-fashioned straw skep. In saying this we do not mean to suggest that the English bee-keepers are not as progressive as those in America—far from that; but there are many cottagers in that country who can not afford any thing better than a straw hive. Blacks being native bees they would naturally use them.—ED.]

THE PIPING OF A VIRGIN WITNESSED.

The Sound Not Made by the Wings.

BY F. DUNDAS TODD.

My friend Mr. Russell recently had the following experience: In one of his hives were several queen-cells; so one day he opened it with the intention of securing a few for nuclei. On taking out the first frame he saw a young queen on it which he at once secured. On lifting the second frame he heard the call of a young queen, and at once spotted her. Understanding there was some little dispute as to how the sound was produced he watched her very closely, and noticed that the wings were perfectly still. The call evidently was emitted from the thorax. In his boyhood, thirty years ago, his father had owned several skeps, and at that time the piping of the young queens had interested him greatly, so he watched this one for several minutes in order to find out the meaning of it. This virgin ran along the comb, about an inch at a time, stuck her head into an ordinary brood-cell, then emitted the call. He watched her repeat this performance at least a score of times. To confirm his observation he called his wife, who agreed as to the details.

Mr. Russell's supposition is that the virgin was looking for her rivals. The important point of the observation is, I take it, that the wings were perfectly still, thus showing they were in nowise concerned in the production of the noise.

Victoria, B. C.

Heads of Grain

from Different Fields

NATIONAL ASSOCIATION.

The membership to-day, March 26, is 3790. The President's mark of 5000 is fast coming in sight. Let the good work go on.

Information Bulletin No. 15 has just been mailed to members. This is of value only as each member uses it. To many it is worth the dues of several years.

The second edition of "Bee-keepers' Legal Rights" has just been mailed to the members. It is a reference volume which every bee-keeper should have in his library. Paid-up members get a free copy. There are none for sale to outsiders.

The winter losses of bees are quite heavy in some places. Some report a loss of three-fourths.

The present honey prospects are good except in Southern California, where they have had no rains for nine weeks.

Each new member gets a copy of the 1909 annual report free, as long as the supply lasts. There are not many left.

R. L. Taylor, Chairman of the Board of Directors, has been having the grip.

If each National member would work to get new members as our recent candidate for president (Mr. Thomas Chantry) has done, we would number 5000 by the close of the honey harvest. Why not do so?

If our members who produce extracted honey will follow the advice given in Information Bulletin No. 15 there will be a great demand for honey, with hopes of better prices next fall. The bulletin contains the following on this subject:

GREAT DEMAND FOR HONEY.

"I have devoted much time to discover why so many complain of no market for their honey. I have asked fifteen wholesale dealers why honey sales were slow when other foods found ready sale at high prices. I also asked bee-keepers who buy tons of honey besides their own for bottling, and also asked many who used to be extensive honey-eaters why they have dropped it from their daily food. Almost every one replies with this answer:

'Good well-ripened honey, sealed by the bees and matured in the hives, is always in demand at fair prices; but this thin stuff, extracted before it is ready, before it is well ripened—that will sour—that never has either flavor or body—that is what spoils the market for honey.'

"Through the Information Bureau I have had sent me many offers of honey to sell. For several such lots I found sales, and later received word from the purchasers that the thin honey had no body or flavor, except souring. If every member of the National Association will promise me that *all of his honey will be ripe, capped-over honey* before it leaves the hives, he will have a market which he can never supply. Our Association can never brand the honey of its members until this is done."

By the time the members of the National get their honey ready for market this year I hope to be able to have new patterns of honey-labels for their special use.

On the evening of March 31, as General Manager N. E. France, with his wife, was mailing the last buggy-load of Bee-keepers' Legal Rights, they met with serious injuries by another team running into their buggy, upsetting it and causing a runaway.

Platteville, Wis.

N. E. FRANCE.

A MODIFIED ALEXANDER PLAN FOR MAKING INCREASE.

The main honey-flow, which is from crimson clover, comes very early in this locality, beginning the last of April and extending until late in May. Our swarming is in March and April. I prefer to have my bees all in one apiary, but am compelled to divide them into four yards in order to find a good bee-range by actual test.

To head off swarming and to secure increase at the same time, I wish to try a combination of the Alexander and brush-swarming plans. When a colony makes preparations for swarming I intend to prepare a hive-body on the old stand, as suggested by Mr. Alexander, and put a queen-excluder over

it. The old hive-body I will set at one side, then brush all the bees before the new hive on the old stand; and when they have all gone in, place the old hive-body over the excluder long enough so that the bees will care for the brood. I will then remove the old body and set it at the side of the old stand, with the entrance turned the other way. In 21 days I can find the new queen in the old hive, cage her, and brush nearly all the bees in front of the new hive on the old stand, then move the old hive containing the new queen and her few bees to a new place as a nucleus, and finally release the queen.

By this plan, nearly all the strength of both hives will be given to the colony on the old stand in time for the clover flow. This will give the new queen with her nucleus until July to build up in time for the sourwood flow.

Will this work all right, or should I follow the ordinary plan of brush swarming? My bees, being nearly all hybrids, are very cross, and boil over when I open the hives. I am a poor hand at finding a queen.

Biltmore, N. C.

W. N. RANDOLPH.

[The plan as proposed above will be perfectly feasible; indeed, if we are not very much mistaken, Mr. Alexander himself suggested this modification in one of his articles. The shaken-swarm plan can be varied materially to suit local conditions and certain plans that the apiarist may have in view. If he does not desire increase, then he can put the second drive of bees in with the first after the brood has all hatched out. If he desires increase, then he should, of course, move the parent hive to some other location. By your plan you secure increase, and at the same time give all the brood, after it hatches out, to the first drive.—ED.]

BLACKS AND HYBRIDS SWARM LESS THAN ITALIANS.

I must add my complaint to that of Mr. W. C. Mollet, page 79, as to the excessive swarming of the Italians. My bees are in ten-frame hives. I always use baits in sections, and give the entrance an inch or so by the width of the hive in hot weather. I have had Italians of two different strains—southern-bred and red clover, and found the same thing in both cases—a mania to swarm. They begin before there is honey enough to go into the supers, and keep it up. Last season I undertook to prevent swarming entirely by removing queen-cells, but more than half swarmed in spite of me. A cell overlooked or a day's delay, and out they would come. Most of the bees in the neighborhood are dark hybrids, with perhaps a few pure blacks. The record for most honey per hive, so far as I know, is held by a colony of dark hybrids which has swarmed not at all in seven years, and has only a $\frac{3}{8}$ x 8-inch entrance all the year round. Others, with similar hives and bees, have had very little swarming, while a neighbor who never got supers put on any of his had only a moderate amount of it. As a new swarm usually makes little or no honey here, and a hive which has swarmed once not much, this is quite an item. By putting back swarms and by careful attention I have been able to get a greater average per hive than others; but individually they have been outdone by those having little or no Italian blood. So far as I know, the experience of others in these parts has been the same. I suggest that, in this country as in Europe, there are places where the blacks are better than the Italians.

Concerning whitewood (poplar) honey, it is the best we know anything about here; but we get only enough of it to make us hungry nowadays.

McConnellsville, O., Feb. 10.

H. D. TENNENT.

[See Mr. Macdonald's article, p. 296.—ED.]

HONEY-DEW ALL RIGHT FOR EATING.

Is it not a fact that, when the honey-bee comes along and gathers this excretion into its honey-sac and then empties it into the cell in the comb, a change takes place, and that this excretion becomes honey-dew honey? and, through this change, is not all waste matter eliminated? If this is established, to what end is such discussion? In the hands of an ignorant press and certain competitive corporations it can work a good deal of harm to those who produce good honey as well as those who produce bad.

Calabasas, Cal., March 26.

S. K. HEDSTROM.

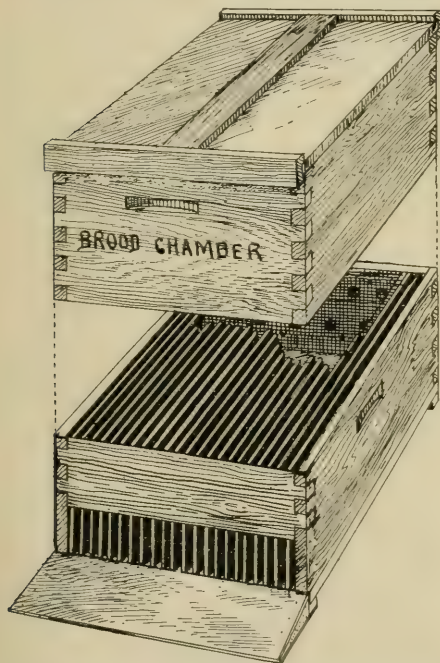
[Any saccharine matter which the bees may gather is changed chemically, either just before or just after it is stored in the comb; but many of the original characteristics of the product will be the

same. For example, nectar from the onion-plant, when "inverted" by the bees into honey, will still have the onion flavor. Honey-dew, when inverted into honey-dew honey, will still have the flavor it had in the first place, although the flavor in both cases has been modified—that is, mellowed. An excretion is, to a great extent, a waste product. It has served its purpose of nourishment in its passage through the alimentary canal, and, through the process, has lost to a very great degree its power to sustain life; but honey-dew, while an excretion of a plant-louse, is a food for other insects, ants, and bees. As it is rich in hydro-carbon (sugar), the amount of waste, relatively speaking, for the bee is probably very small. Honey-dew, even though it be an excretion, can not, therefore, be regarded as an ordinary excrement. The alimentary canal of the plant-louse is probably as clean as the honey-stomach of the bee. There is no reason why a honey-dew of good flavor should not be as clean and wholesome as most honeys. We should not class honey-dew honey alongside of ordinary excreta.—ED.]

SLATTED CLUSTERING-SPACE UNDER THE BROOD-CHAMBER TO PREVENT SWARMING.

Working along the lines as practiced by Dr. Miller in giving ventilation for swarm control I made a "contraption" that worked very successfully when placed under the brood-chamber of my worst colony of last year; in fact, it was the only colony this year that did not swarm.

I made a box of the same dimensions as a super, and same depth. The front I cut away half way up, making a large entrance. In the back I bored a number of half-inch holes extending across the box, and over these I tacked wire screen on the inside.



I filled this box or frame with partitions a bee-space apart. The partitions were made from old store boxes of about $\frac{1}{4}$ -inch stuff, but would have given more room and ventilation if something like thin fences had been used.

This contrivance gives plenty of clustering-space below the frames, a good current of air from the large entrance in front to the half-inch holes in the back. The objection I find to the blocks at the corners is that the manipulator is in the way of the flying bees if they can enter from all sides.

Nazareth, Pa., Aug. 23.

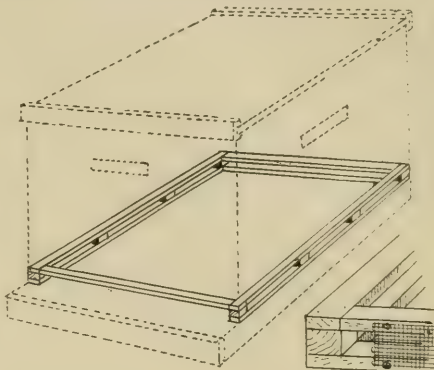
GEO. H. BEDFORD.

[It will be seen that Mr. Bedford has gone a step further than Mr. Junge, p. 295, in that his outer en-

trance is made very large—much larger than the average full-sized hive-entrance, and it seems as though this might be a desirable feature.—ED.]

A FRAME TO PROVIDE EXTRA BOTTOM VENTILATION.

I have noticed the method of ventilating hives by placing inch blocks below the brood-chamber so as to have a space all around; but robbers or even mice could get in so large a space. To overcome this difficulty I propose the scheme as illustrated. After a



frame is made according to this drawing it will raise the hive-body one inch above the bottom-board with only a half-inch space. To stop the robbing we use a piece of wire cloth one inch wide, and long enough to go around the two sides and back of the frame, tacked on the outside. If four or five supers were tiered up it might be advisable to use one of these between supers. Of course, this must be tried before it can be recommended.

Washington, D. C.,

F. W. H. WEISHAUP.

ALLEY TRAPS IN OUT-APIARIES.

I should like to see reports on the use of Alley queen and drone traps in out-apiaries that are run for comb honey. Are they a success or failure in holding swarms until the arrival of the apiarist in, say, two or three days? Do these traps permit of sufficient ventilation during the swarming season?

When bees are allowed to swarm naturally and are then shaken, I find that much better results are secured. I had several cases of swarms issuing naturally; but as the queen could not fly, the bees returned to the parent hive. I then proceeded as in the shaken-swarm plan, and had splendid results. I have 200 colonies in outyards, and find that in some years all plans fail except natural swarming.

New Milford, Pa.

F. W. DEAN.

[The Alley trap will hold swarms for two or three days; but as a rule it is far better to take care of a swarm within a few hours after it has issued. But the question may be asked, "How can we know that a swarm has gone forth?" Look carefully over the traps; and if a bunch of bees is found upstairs in any of them the presumption is that there is a queen there. The colony should be immediately shaken, and treated as a shook swarm.

When practicing shaking, care should be taken to do the work just before the colony is about to swarm. The presence of swarming-cells, and the disposition on the part of the colony to loaf, will show that it ought to be shaken. There is no earthly use in shaking the colony if it shows no swarming indications. In your case you can save a little trouble if you shake just before the swarm issues instead of doing it afterward.—ED.]

THE POSITION OF BAIT SECTIONS.

My experience with bait sections has been that the bait should always be in the back end of the super, and on the side where the sun shines most during the day, as that is always where my bees start to work first when no baits are given, as the weather is cool in early summer. Bees work where it is warmer so they can make wax more easily.

Canon City, Col., Oct. 22.

V. P. OUTLER.

TWO SIMPLE METHODS FOR MAKING INCREASE.

In the *American Bee Journal* for last year, p. 275, a method of swarming bees is given. Is it necessary to have queen-cells in the sections when transferring from hive A to hive B, or do the bees make this queen-cell after the combs are transferred? It is not clear to me where the queen-cells come from in the queenless hive.

South Norwalk, Ct.
[Dr. Miller replies:]

H. BEAUPAIN.

To make it intelligible to others I give the plan: Take from the hive to be divided half its combs with the adhering bees. Put them in an empty hive and fill up each hive with frames filled with foundation and leave the two hives standing side by side. A week to ten days later there will be in one hive eggs and brood in all stages. The other hive will have only sealed brood and perhaps some large grubs. Move the latter hive to a new stand ten feet or more distant. The bees will do the rest.

This is not given as a best plan, but as one of the very simplest for a beginner. To make a more nearly equal division, swap the four frames of foundation in the queenless hive for four frames of brood of the other hive at the time when the queenless hive is moved to its new stand.

Answering H. B.'s question, the bees in the queenless part start queen-cells as soon as they are made queenless, and no queen-cells need be given them.

To make the plan still simpler (although not so good), merely make the division as directed, without any further change in seven to ten days.

The objection to all the foregoing is that you are not sure of the best kind of queen. Here is a plan which will give a good queen, although the plan is not quite so simple, because you must find the queen: Take two frames of brood with adhering bees, and put them together with the queen in an empty hive on a new stand. That leaves on the old stand all the field force and nearly all the young bees—everything in the very best shape to rear a good queen. In ten days let the hives swap places. That's all. You now have two good colonies. The one on the old stand with the queen and the field force will do good work at surplus. If you want it to do still better, brush (don't shake or you will kill the queen-cells) the bees from half the combs of the queenless part into the queenright part at the time you return the queen to the old stand.

Marengo, Ill.

C. C. MILLER.

PREPARING BEES FOR SHIPMENT.

I am going to ship some bees by express late in April or early in May in eight and eleven frame hives. Some hives will have to be transferred to another railroad, and thus may be longer on the way. My bees were put out March 23, and were in good condition. I protected them with building-paper.

1. Will a rim on top of the hive to tack the wire screen to be too shallow if it is $\frac{3}{4}$ thick, or should it be more? I have strips cut $\frac{1}{4}$ thick.

2. What distance above this wire screen should I fix the cover for cool or warm weather?

3. What kind of directions should I place on the hive to insure careful handling by railway officials?

4. How long can bees be confined this way without much loss?

Giroux, Man., Can.

C. LANGILL.

[1. A rim such as you describe will be deep enough for this time of year. In hot weather we would advise not less than two inches deep.

2. One or two inches—preferably two.

3. We usually put on the words "Live bees. Keep out of the sun. Handle with care." The fact that the bees are "alive" insures careful handling on the part of the railroad people.

4. This depends upon the time of year, and how the bees are put up. When wire cloth is supplied top and bottom, and the bees given water, they can go a couple of weeks; but the water should be given quite often. If they seem to be suffering from want of air, the wire screens should be sprinkled with water to cool them off. This will drive them back from the wire cloth and cool them off. It is usually desirable to get bees through to destination as soon as possible. When properly put up they will go through without any water in good shape if not on the journey longer than four or five days.

A very important requisite is to see that there is sufficient ventilation for the size of the colony. Do not try to put a very powerful colony down into one hive-body. If it is very strong, put on a half-depth

super, then a wire screen. There should also be screen for the bottom, and below the screen should be secured the bottom-board so that there may be a clearance of a couple of inches. In the spring months the screen on top is usually sufficient.—ED.]

SHOULD THE EXCLUDER BE USED?

In studying Doolittle's plan for the production of comb honey I am a little puzzled to understand the treatment in chapters 3 and 4. After the bees are shaken into the prepared hive and the super is to be placed thereon, is the queen-excluder recommended, or is it abandoned? He has removed the excluder that was used between the hive and prepared hive in bloom time.

Silver City, N. M., Jan. 27. MRS. O. C. HINMAN.

[This was referred to Mr. Doolittle, who replies:]

When the ten-frame Langstroth hive is used, there is no need of a queen-excluder. Often the bees are shaken into the prepared hive, for with so large a brood-chamber the queen is not inclined to put brood in the sections. With an eight-frame Langstroth hive, or a small sectional brood-chamber, it is well to use the excluder as a precaution against brood in the sections.

Borodino, N. Y., April 11.

G. M. DOOLITTLE.

WILL PAPER INSTEAD OF CANDY DO IN AN INTRODUCING-CAGE?

What is the best method to introduce queens to a colony that has swarmed—that is, when I move the old hive to a new location, and in the morning wish to introduce a laying queen? Is it necessary to have candy in the cage, or would it do to fill up the hole with fibrous paper?

Wing, Ark., Feb. 18.

R. N. KING.

[The simplest and best way for the average beginner to introduce a queen is to use an ordinary introducing-cage having in one end a plug of candy which the bees eat out in from 12 to 36 hours. When the candy is removed the queen is released, and by that time will have acquired the scent of the colony. A plug of soft fibrous paper will not answer; but we frequently put a thin piece of pasteboard over the plug of candy to delay the entrance of the bees into the cage. This paper must not cover entirely the candy, as otherwise the bees will not eat it away. When properly put on, the pasteboard and candy will delay the bees' access to the queen from 24 to 48 hours. Without the pasteboard she may be released anywhere from 12 to 24 hours. This is too soon in many cases.—ED.]

THE SCHOLL HIVE NUMBER.

Louis H. Scholl, page 87, 1908, gives his method of numbering hives, and invites bee-keepers to try the same and report. I have tried the plan for the last two seasons, and find it the most convenient I ever saw. The cost for my numbers up to 50 is less than 25 cts., and they will last for years. With these numbers the work of keeping a record of a colony is reduced to almost nothing. A. A. AUGENSTEIN, Dakota, Ill., Feb. 16.

SPRAYING IN BLOOM DESTRUCTIVE TO BEES.

I should like to have some information about spraying with poison while the trees are in full bloom. Will it not spoil the honey? There are lots of bees in our place. Is there any protection?

Hockingport, O., April 5.

A. B. CHUTE.

[Bees will soon be killed in the vicinity where the Bordeaux mixtures are applied to the trees while they are in bloom. The experiment stations and practically all authorities now say that trees should be sprayed just before they come into bloom and about a week after the petals fall. There is no advantage—indeed, it is a great disadvantage to the fruit-grower—in spraying while the trees are in flower. See the statement by Mr. Waugh, on page 243. He is probably the best authority, from the standpoint of fruit-growers, in the United States.

There is no law in Ohio to prevent the spraying of trees while in bloom. The only thing you can do is to send the fruit-growers the April 1st and 15th issues of this journal. Secure a copy of Waugh's book, "The American Apple Orchard," and refer them to chapter 11. These ignorant fruit-growers should be posted.—ED.]

* Price, postpaid, \$1.00.

Our Homes

By A. I. Root

He that hath no rule over his own spirit is like a city that is broken down, and without walls.—PROV. 26: 28.

Two weeks have passed since I told you Mrs. Root and I were dispensing with suppers; and, may the Lord be praised, we shall probably go without suppers the rest of our lives. Our lives will probably be not only longer, but of more value to ourselves and all around us. The idea is humiliating, I confess, but I am now forced to conclude that I have for about 50 years been to an infinite amount of trouble to take more nourishing (and expensive) food into my system than was needed or good for me. For a time I felt hungry about my usual meal time, and occasionally about bedtime I say to Mrs. Root, "Sue, I would willingly give half a dollar for a supper of beefsteak and baked potatoes if I were sure it would be good for me;" but instead of the supper I just went to bed, and when I awoke at just about daylight I didn't feel any hunger at all, and there was no bad taste in my mouth as there has been for so many years on first arising. Now pardon me if I speak plainly in regard to a matter that is likely to trouble elderly people more or less. For years past I have had troubled dreams, and distress more or less, unless I went one or more times to the water-closet. Terry has many times spoken of this, and suggested a remedy. Well, almost as soon as I gave up eating any thing after the noonday meal I began to sleep quietly and peacefully until morning. I now eat almost what I please at dinner time, and as much as I please, and a great lot of fruit (mulberries just now) after dinner. But even if I should occasionally feel a little unpleasantly full for an hour or two, before bed time every thing in the region of digestion is quiet and tranquil. Let me say *again*, that I feel ashamed to admit that I, through stupidity, have been all these years eating suppers I did not need, and would have been better off—yes, *far better off* without. My dear brother and sister, just think of the time you might have for pleasant and profitable visiting if there were no *everlasting supper* in the way. "Hail to the brightness of Zion's glad morning" when all men and women (who love the Lord Jesus Christ) shall consent to use the time heretofore spent in getting supper (and washing the dishes), for spreading the gospel or engaging in any thing that will benefit themselves and their fellow-men.

I am going to close this Home paper (penned hastily just before starting to my northern home), with a letter from a bright *young* friend who is just beginning to hear the "emancipation (from three meals a day) proclamation."

Mr. A. I. Root:—Yes, I was "listening" in the March 15th number of GLEANINGS when you were talking of Mr. Terry and his work for better and more sensible living. And I am one of the younger ones too—just passed my first quarter-century.

For several years I have been interested in hygienic living, especially in eating, but never put very much of it into practice, partly because I did not feel the necessity, and partly because no one around me made a systematic study of nutrition. I was always troubled more or less with a bad taste in the mouth on getting up in the morning. The thought came to me finally that it was more important to keep the interior of the body clean and healthy than the outside, for the membranes are much more sensitive; and when any thing gets wrong inside it is much harder to fix than a bruise on the arm or a corn on one's toe. Is it not true that, if we kept the exterior of our bodies as carelessly as many do their digestive tracts, we should be very offensive creatures indeed?

Fletcher's method of eating and living appealed to me in several ways. First, I wanted more time for reading and studying, evenings, so I began eating two meals a day and "Fletcherizing" more or less.

It is surprising how few of one's good ideas are carried out. I have put enough of them into operation, however, to be benefited very materially. I found that, by eating foods that combine well, and "chewing the stuffing" out of everything that goes into the mouth, six or seven hours' sleep now does where I used to require eight or nine.

Then there is a substantial saving too. I am living on from two and a half to three dollars a week, and get my meals at restaurants mostly. My friends here pay from five to six dollars a week, and have to sleep two hours a day more than I do. It was not so very long ago that I required more myself.

But I have a very hard time getting just what I should have in a restaurant. The idea came that one could buy food such as the Battle Creek Sanitarium people put out, and, with fruits and nuts, have a diet that would supply all the elements needed to nourish the body, and the space needed to keep this food need not be large. So I tried it after getting some advice from the manager of the Sanitarium Food Store here in Denver. My food occupies no more space than my collars and ties, and my supper or lunch to-night consisted of several wheat and graham crackers, a few of Christian's honey wafers, a handful of shelled peanuts (raw), some honey, and then two good-sized apples. I did not make as much litter as a man does in smoking a cigar; had not a single dish to wash, no table-cloth to brush off or clear of dishes, and I do have a very pronounced feeling that it is sensible. One can not help becoming enthusiastic when he realizes what a small amount of energy is needed to supply the physical needs of the body, and how much more he has for work.

The Colorado Sanitarium, a branch of the Battle Creek institution, manufacture the same line of goods as are made in the East, and I get the goods at their store here in Denver.* I enclose a little pamphlet on foods that tells some of the reasons for adopting this diet. No one teaching in regard to diet will absolutely suit every case; but the main thing is to study and experiment till the best system of nutrition is found. I consider my body a sort of garden that it is my privilege to cultivate to the utmost and bring forth to maturity the choicest of fruits, mental and physical.

You may rest assured that a goodly number of GLEANINGS readers digest your Home talks, for I have a chance to visit with a good many over this State, and they nearly all mention your department when bee-papers are spoken of.

Hoping to see many more of your Home papers I am with you for a century run.

Denver, Col., April 4.

WESLEY FOSTER.

There are three very bright suggestions in the above. First, "It is even *more* important that we keep the interior of the body clean than the outside;" second, "My food occupies no more space than my collars and ties;" no table-cloth or dishes.

*Address for valuable pamphlet and price list. Colorado Sanitarium Food Co., Boulder, Colorado. Denver Branch, 1515 Stout St., Denver, Col.—A. I. R.

Thirdly, "No one teaching in regard to diet will absolutely suit every case." "*Our bodies* are a sort of garden," etc.

Later.—To-day, April 23, we are back once more in our Ohio home. During our trip, which occupied the greater part of three days, we carefully followed our diet of two meals a day, eating nothing after our dinner at noon.* As we reached Medina just about supper-time, each one of our five children urged us to sit down to supper; and I shall have to confess that the smoking viands were quite a temptation to us to break our pledge; and after our long and in some respects tiresome trip, the temptation was very great to have one more good square meal between five and six in the afternoon. But Mrs. Root and I both decided that we would not break in upon the new regime that has given us so much satisfaction. It requires some self-command and self-sacrifice, and "ruling of one's own spirit," and I am sure we both felt better than if we had partaken of food. The next morning I felt well rested, and not particularly hungry. And this whole matter explains fully what I have been trying to teach for many years—that in these lives God has given us to live we are to let *duty* rule, and not inclination. Our constant motto should be what I *ought* to do and not what I *want* to do—that is, our lower appetites and animal nature should be constantly subservient to reason and good common sense.

Now I will add in closing that I still have my apples in the evening—that is, a few good ripe mellow apples, so you will not think I do not practice what I preach. I have tried both ways, with and without the apples, and I am satisfied that the fruit alone does not tax my digestive apparatus in any way so as to be a detriment. Mrs. Root does not care for the apples in the evening.

Poultry Department

By A. I. Root

GETTING RICH WITH CHICKENS: THE OTHER SIDE OF THE MATTER.

Mrs. A. I. Root.—I notice that you have been kind enough to express hearty approbation of Mr. Boyer's write-up of the Corning egg-farm. You have also even more heartily approved Milo Hastings' book, "The Dollar Hen," as well as the Prairie State Incubator Co's catalog. It is a long distance between the conservative statements in the latter books and the title of the Corning egg-book.

I have been waiting for criticism of the Corning egg-book; but I have not yet read any thing of that kind. I was hoping that, with your penchant for showing up the poultry fakes, you would have read this book carefully enough to discover the delusive mode of reasoning employed to obtain the above-mentioned title. The statement of "\$8.41 per hen

per year" will, if allowed to go unchallenged, cause a great many would-be poultry-farmers to embark in the poultry business who never would have gone into it had the statement been conservative. This letter is written to try to save those who may risk their small savings in the "Corning method" (?).

In the first place, look at the admission that the Cornings have spent three years and over \$20,000 on this egg-farm—a considerable part of one's life, and a good-sized fortune for the ordinary man.

In obtaining the net profit per hen, no mention is made of the interest on investment, insurance, upkeep due to depreciation, etc. Let us estimate what this amounts to.

INVESTMENT—	
12 acres of land at \$500	\$6000 00
1 Homestead	4000 00
1 plant, including implements, automobile, horses, etc.,	30000 00
INSURANCE—	
Plant at rate of 50 cts. per \$100	\$150 00
House, \$2500 at 25 cts. per \$100	6 25
UP-KEEP—	
15% of \$30,000 (see Dollar Hen, p. 71)	\$4500 00
INTEREST—	
8% of \$30,000	\$2400 00
6% of \$10,000	600 00

Note that the homestead is charged against the hens, because just that amount is tied up and can not be used in the egg business.

Accepting the figures on page 13 of the Corning egg-book relating to revenue and expenditures at their face value, we shall have for revenue \$15,714.84. To the expenditure of \$3194.03 we will add insurance, \$156.25; up-keep, \$4500; interest, \$3000, or a total of \$10,850.28. Subtracting this from the revenue we get \$4864.56, or the Cornings would have over \$2400 each for their labor per year, out of which they would have to pay their living expenses. Taking the above figures into account, the net profit per hen per year would be \$2.49—a figure much more reasonable than \$6.41.

Not wishing to throw any doubt on the figures as set down, and criticising only the methods of obtaining them, let us try to show what the average would-be poultry-farmer could expect. We learn that 23,316 dozen eggs were laid in ten months on the Corning farm. This number was obtained by multiplying the total number of hens (1953) by the average egg yield per hen for only ten months. A serious misstatement is made on p. 18, end of paragraph three of the Corning book—"Leghorns on Sunny Slope Farm last year averaged 143.25 (eggs) for ten months, at the rate of 171.9 a year." Suppose the hens laid no eggs for the remainder of the year, the yearly average would be about 120 eggs per hen year instead of 171.9. Probably 125 would be a fair estimate, as some hens would lay during the moulting season. What would this do to the Cornings' figures, if they kept their hens for 12 months after they began to lay, as most of us do? I do not see why it is not correct, when figuring on a yearly basis, to count in two months before pullets begin to lay. I should like to ask the Cornings if they would buy several thousand moulting hens (yearlings) and pay just one dollar apiece for them. Certainly 144 eggs per hen per year is not exceptional for a large flock of hens when the drones are eliminated by trap nests. The Cornings use no trap nests, and 125 eggs per hen per year is all they could expect by their method—see *Refractive Poultry Journal*, December, 1908, page 967, end of first paragraph of first column.

When it comes to the price received for eggs sold by the Cornings, it appears to me that they forgot to mention the cost of shipping, and also that only the best retail prices were averaged. No mention is made of the prices received from commission merchants, although it is admitted that eggs were sold to such (see middle of page 15, Corning book). No mention is made of the cost of selling, such as advertising, stationery, postage, printing, greasing the Stewarts' palm, etc. Such things as these would have to be paid for by the ordinary farmer. Note that the Cornings' letterhead reads that their eggs are "delivered daily by messenger," which ought to cost something when 20,000 dozen eggs are so delivered.

The average price paid for eggs by consumers in the United States during 1909 was 33 cents, and they were sold by the farmers at an average price of 22 cents per dozen. Milo Hastings has charted a price-curve on page 172 for the price of eggs during 1908.

* I have already talked about the saving in time and money by having only two meals. If this is true in the home, how much more is it true when traveling! Three meals a day taken in the dining-car is rather expensive business, as you know if you have tried it. Well, you not only cut off a third of the expense, but you will find you can stand the wear and tear of travel very much better.

The highest price is about 32 cents, and eggs were retailed in New York city for nearly double that amount during the early part of the winter. The average price received by F. B. Atherton in 1908 for eggs was 32½ cts. per dozen, from which was deducted express charges, commission, breakage, and return of empty cases. This amounts to about 5½ cts. per dozen, making a net average price of 27 cts. (see "Egg-farm that Pays \$1300 per Year," *Reliable Poultry Journal*, December, 1908).

I should like to ask the reader what price he thinks he can obtain for eggs when selling upward of 20,000 dozen per year.

The Cornings are credited with selling 1900 hens, although they are called pullets, for two dollars each, when sixteen months old. These hens were starting to moult, and could not be of much use for the next six months. The reason given for the high price received is that they were sold for breeding purposes. It is universally admitted that yearling hens make good breeders; but hens kept in confinement, and forced for eggs, have lost a great part of their vitality, and never can produce strong healthy chickens (see *Prairie State Incubator Catalog*, pages 5, 15, 24). The inexperienced (or otherwise) persons who purchase such birds for breeding purposes get "stung;" and whose reputation suffers in the end? Personally I should like to get two dollars each for yearling hens in large quantities, or even that amount for pullets a year younger. According to the advertisements that have come under my observation, the poultry-raisers are very glad to get two dollars apiece for their young surplus stock when sold singly, and are glad to accept \$1.25 to \$1.50 each when selling by the dozen. Even at that they do not advance their prices until December. If the would-be egg-farmer figures that he can get 75 cents per head for yearling hens (especially Leghorns) he will be high enough.

On page 21 the Cornings speak of their original and economical laying-houses. In the first place, houses just as good could be built for half the money. The only original principle employed is to build these houses so as to house one large flock. The objections to this kind of house are drafts and disease. In order to get out of the wind blowing through this house, the hens have to crowd back under the dropping-boards (see middle of page 36). Disease can be kept under only by eternal vigilance. The chief criticism I have to this house is the small amount of opening there is in front, especially as the hens are allowed only in the scratching-room in warm weather (see bottom of page 36). These houses are almost identical in size and shape with mine, an illustrated description of which was published in the *Reliable Poultry Journal* for January, 1909. Many poultrymen, including myself, use the dry method of feeding. The hens get a large feed at night, consisting of a quantity of the best commercial scratch feed and a varying quantity of cracked corn and oats scattered in the litter. At the after-dark inspection more grain is buried in the litter if deemed necessary. Water is given them every morning—hot in winter. At noon, sprouted oats and table-scraps are fed. A hopper containing dry mash is placed before the birds in the afternoon. Mash consists of corn meal, bran, middlings, red-dog, ground oats, beef scrap, cut clover, charcoal, etc. Hoppers containing grit, shell, and charcoal are placed before them all the time. The hens enjoy picking cinders out of the coal ashes that are spread upon the dropping-boards.

West Nutley, N. J., March 30. A. W. FLEMING.

Thanks, friend F., for your criticism of the Corning egg-book. I still think the book a valuable contribution to our recent poultry literature, even if it does give an extravagant idea in many respects. In fact, I think it very much superior to most of the books written to show up a particular system. In looking over the book hastily I was especially pleased with the footnotes from Boyer.

The *Farm Journal* folks may have something to say in regard to your criticisms of the book; and if so I shall be very glad to receive them, for God knows we want to give the great hard-working public the real

unvarnished truth in regard to the poultry business.

While on this subject I wish to say something more about the book I mentioned on page 167, March 1—"the Kellerstrass way of raising poultry"—the book that "one can read through in 35 minutes, but which took 36 years to write." In the very opening chapter of the book Mr. Kellerstrass says, "Remember, I have been a good many years writing this book, and it is all from actual experience—no hot-air dreams, but actual experience." I have before pointed out to you that a great part of this dollar book, with only 91 pages, is devoted to advertising extravagantly his eggs at \$2.00 apiece. Now, one of our poultry-journals has recently pointed out that this is not all of it. Another great part of the book is made up of directions for work during every month in the year, from January to December. When I read over these instructions it seemed to me they did not refer *particularly* to the "Kellerstrass way" nor to the Crystal White Orpington chickens. Well, this poultry-journal calls attention to the fact that nearly all of these instructions for each month in the year are *copied*, the greater part of them, word for word, from Park & Pollard's *Poultry Almanac*, Boston, Mass. This almanac (for the years 1907, 1908, 1909, and 1910) and the Kellerstrass book are before me. How does this condition of things correspond with the paragraph I have quoted about "no hot-air dreams but *actual experience*"? What explanation has Mr. Kellerstrass and his numerous friends (including many of the poultry-journals) to make about it?

High-pressure Gardening

By A. I. ROOT

TESTING SEED CORN IN OUR SCHOOLS.

The Department of Agriculture, Washington, has just done a wonderfully wise thing in preparing a pamphlet, dated April 9, 1910, for use in our schools, and especially our country schools, instructing the teachers and children how to test seed corn before it is planted in the field. I can not think of any thing more valuable in the education of a child than to interest him in seed germination. This method, if followed out, would not only add thousands of dollars, but perhaps millions, to the income of the farmers of our nation. Last, but not least, it would tend to put the parents and teachers in touch with each other better than almost any thing else; and it certainly should give the parents confidence in regard to the value of the schools by getting the children to be on hand promptly on every school day. Apply to the Department of Agriculture, Washington, D. C., and ask for Circular 96, entitled "How to Test Seed Corn in the Schools."

The plan is about the same as I have

given in GLEANINGS every spring for three or four years. It takes about fifteen ears of good size to plant an acre. Select the best ears you can find. Place them where they will not be disturbed, in rows of ten ears each. Then get a shallow box, say 1½ feet wide and 2 feet long. Fill it with sand or good garden soil, and then with tacks and strings lay it out in squares about 1½ inches on each side. Have as many squares as you have ears of corn. Our plan is to lay a piece of two-inch-mesh poultry-netting over the box. Fasten it down with tacks, and then take five grains of corn from each ear and plant them in the meshes of the poultry-netting. Have your box numbered across one end and across one side, and have it so arranged that, when any square does not show five good strong corn-plants, the ear from which these five kernels were taken may be discarded. In this way, when you come to plant you are pretty sure to have a good strong plant from each kernel of corn. The average schoolchild, with a little instruction from the teacher, will soon learn to do the work, and will greatly enjoy it.

May the Lord be praised for this new and wonderful scheme for getting our American schools in touch, not only with high-pressure gardening, but high-pressure *agriculture* in general.

SOIL SUITABLE FOR SWEET CLOVER.

I have inquiries from readers of the *Rural New-Yorker* in regard to the seeding of sweet clover and the character of soil best suited to it. Sweet clover will grow on any soil that is not water-logged if it contains sufficient moisture to sprout the seed. On very thin and worn soils the growth is small compared with that on fertile soils. We use sweet clover to build up thin and much depleted soils—fields that have become useless as pasture—those filled with washes and gullies. These fields generally have a growth of small bushes or briars, where they have been lying idle for several years. These are cut and tramped into the ruts. The tops of the little ridges are dug off and raked into the ruts, which help to hold the briars and bushes in place until they are converted into humus. If the washes and gullies are not too deep the seed is harrowed in with a double A harrow; otherwise the seed is sown early in the spring, just as soon as the soil can be stirred, and about half a bushel of spring oats sown with it. The amount of seed to be sown per acre on fields as described above is 15 or 20 lbs.; on soil that is reasonably fertile, where sown for hay or pasture, 25 to 30 lbs. per acre. Where sown to produce seed, the soil should be reasonably fertile and 15 lbs. of seed per acre sown broadcast, and harrowed in. Sow as early in the spring as the soil can be stirred. For fall seeding, prepare a good seed-bed and sow the seed in October.

Sweet clover for hay should be cut just as the first blossoms appear. If left standing longer the stems become woody, and a great many of the leaves fall off when cured. Great care should be exercised to prevent the hay sun-burning, as this will destroy the palatableness and its nutritive properties. There is no better way to fit a piece of ground for alfalfa than to seed to sweet clover, cut off a crop of hay the first season, and plow under the second season when the clover is about a foot tall; then cultivate with drag and harrow until the first of September, then seed to alfalfa. The sweet clover improves the soil and inoculates it with the nitrogen-rathering bacteria which are so necessary to the existence of alfalfa. When seeding for hay I would not use any nurse crop; and do not cut too close to the ground the first time. Leave five or six inches of stubble to protect the crown and roots until a new growth is made. If permitted to go to seed the second season, and the seed to ripen, it will reseed itself. The sweet-clover plant lives but two years. It dies at the end of the second season, and its large fleshy

roots decay rapidly, admitting the air deep into the subsoil.

Warsaw, Ky.

J. W. G.

—*Rural New-Yorker*.

Temperance

When I gave place to "Who are the guilty ones?" on p. 96, Feb. 1, I was aware it had appeared in print a good many times, and also that it might not all have occurred exactly as given there; but since then a clipping has been sent me of something that *has occurred* quite recently, very much like it. May God be praised that even judges are beginning to wake up and call things by their right names. Here is the clipping:

THE SALOON CONVICTED: THE BOYS HANGED.

In pronouncing the death sentence on two boy murderers at Owatonna, Minn., Judge Buckman delivered this philippic against the saloon:

"Every community can well ask if it is not equally guilty with its sister city in not making a vigorous effort to remove the snares which lie in waiting for the young in almost every town in the Union. These boys can not have been brought to perpetrate such a crime through the influence of heredity. There is nothing to show it. It must be charged, if it be true that they are guilty, to their environment. Without any ill feeling toward the people of this community, I must say that they are *particeps criminis* in this tragedy, if the boys are guilty. The people have allowed the conditions which have brought these boys to such a pass. It is because the boys could procure of newsdealers such literature as debased their moral natures; because the police, knowing of the conditions existing in the rooms of these, permitted them to go on; because the saloon-keepers of the city were allowed to place on the lips of the young that which fires the brain and sears the soul. By imposing the death sentence the court will be striking at the effect, not the cause; and if the cause remains undisturbed, the result will be be another such case as a righteous retribution upon those responsible."

HITTING THE NAIL SQUARELY ON THE HEAD.

The following, which I clip from the *Chicago Advance*, sums up the whole matter of "wet and dry" better than any thing I know of. I wish it could be held up before the whole wide world, until every man, woman, and child has read it.

LET THEM MOVE.

The following appeared in the funny columns of the press recently:

"What are they moving the church for?"

"Well, stranger, I'm mayor of these diggin's, an' fer law enforcement. We've got an ordinance what says no saloon shall be nearer than 300 feet from a church. I give 'em three days to move the church."

This incident did not occur in Chicago, but the idea has been occurring every day since the anti-saloon campaign began. It is about all there is of the saloon side of the question. Wives have cried out in agony that the saloons were taking the husband's wages and robbing the children of bread. "Well, let the wives move out and the children stop eating." Mothers have said with bitter tears that saloons were ruining their sons. "Well, let the mothers forget their sons and stop their whining." Citizens have declared that saloons are the resort of thieves and the whole bad bum element. "Well, let the good citizens go to some other country, if they don't like it."

In a word, the saloons are against the welfare and the common good which all law and righteous government are intended to promote. "But let it all go—the saloon must stay."

How can the people of a county that has voted *wet* look a good man or woman full in the face after reading the above?

Cleanings in Bee Culture

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EDITORIAL

By E. R. ROOT

MILLER'S PATENT AUTOMATIC SWARM-CATCHER.

ON the front cover of this issue we take pleasure in presenting a swarm-catcher that is absolutely automatic. We do not know whether it "works for nothing and boards itself," but we are inclined to think not. The inventor tells of it in this wise:

The illustration shows an experience I had in hiving a swarm of bees. I had had but little experience with bees, but had learned that, if I caught the queen, I could get the bees where I wanted them. I walked up from quite a distance down in the field with this swarm, and my wife took my picture. I like to be on friendly terms with the bees, but this was a little greater display of intimacy than I was expecting.

Denver, Col.

W. L. MILLER.

NEW JERSEY GETS A FOUL-BROOD BILL PASSED, AND THEN THE GOVERNOR VETOES IT.

THE following letter, just received from the Secretary of the New Jersey Bee-keepers' Association, will explain:

The bee-keepers of New Jersey, through their State Association, succeeded in getting a foul-brood bill passed, with practically no opposition; but when it came before the Governor for his approval he vetoed it on April 12. We do not know his reasons, but understand he considered it too drastic.

Our bill was modeled after the one recommended by Dr. E. F. Phillips, and was considered a good one by all who saw it.

We think it was rather from a lack of understanding of the whole matter more than any thing else on the part of the Governor that he vetoed it. We spent all our efforts to get a bill on the assemblymen and senators, thinking the Governor would surely approve.

To say that we are highly disappointed is expressing it mildly. After working so hard to get a bill passed, and then have it stabbed by the Governor, was the least of our expectations. But then, there is no use in fretting. We shall simply have to stay sweet, and try again. I suppose we shall have to frame a bill to meet the Governor's objections, and try again next winter. This is our individual opinion, and will have to be approved by the association. In the mean time we should like to have more bee-keepers join the association. Dues are 50 cts. a year. We know some bee-keepers who have held aloof from the association, thinking we could never get a bill passed. The stronger our association, the stronger the show we can make next winter.

Pittstown, N. J.

ALBERT G. HANN, Sec.

The New Jersey bee-keepers have been working long and hard to get a foul-brood bill passed. There was most urgent need of it, and it is unfortunate that the New Jersey bee-keepers did not see the very great importance of informing the Governor of

its importance. Gov. Folk, of Missouri, vetoed a foul-brood bill after it had passed both houses, simply because he did not know any thing about the bee-keeping industry nor the dangers that were threatening it. These two cases ought to be a lesson to other States that are working strenuously to get foul-brood laws on their statute-books.

"SELLING THE HONEY CROP TO THE BEST ADVANTAGE."

UNDER the above caption, Mr. Hutchinson, of the *Bee-keeper's Review*, in his issue for May, has quite an extended editorial. In the first two paragraphs he says:

"Did you ever stop to think that you spend all of your season producing your crop of honey, and then sell it in about fifteen minutes?" I came across the foregoing sentence in a circular just sent out by the energetic, enterprising secretary of our Michigan State Bee-keepers' Association. It is true that we bend every energy to the successful wintering of our bees; we make chaff hives, or protect the bees with some kind of packing, or we put them in the cellar and then watch the temperature as a mother watches her sleeping child; we feed the bees in the spring if they need it; we coax them into the supers by means of "bait" sections; we lift and sweat, and suffer stings; and, finally, crate up our beautiful product with loving care, and then, as Bro. Tyrrell says, some of us sell it in about fifteen minutes.

The indifference exhibited by some producers in disposing of their crop is certainly exasperating. We can not all peddle our honey; we can not all sell it to retailers; we can not all build up a mail-order trade. Some of us must sell to wholesale dealers, or consign to commission men; but in any case there is no excuse for the lack of interest, the utter indifference, the "I'll-take-whatever-you'll-give-me" spirit.

Further on he says, "In other lines of business, production is looked upon as only half the problem." . . . "The selling end has been shamefully neglected." . . . "It is quite likely that many men are now following the plan that is best for them; but it is equally evident that thousands of men are not—men who might materially increase the revenue from their crops by some change in their plan of selling." . . . "Not every producer can become a successful retail salesman." . . . "It is safe to admit that men who are now retailing their honey might find it much more profitable to increase their production until it reached the carload stage, abandon the retail trade, and turn their whole attention to production." . . . "Selling should be only a part of a plan that is the most perfect for some particular man and his environments. What I am pleading for is the proper recognition of the importance of the selling factor."

It is probably true, as Mr. Hutchinson says, that bee-keepers have not been giving enough attention to the "selling factor,"

We shall be glad to open our columns to a discussion of the same subject.

After all that is said and done, honey production is a business in itself. The art of selling at good prices is entirely another business. It is seldom that we find any one man sufficiently educated in the art of producing and selling both; and it therefore follows that the great majority of bee-keepers will have to depend on some one else to do their selling. While this is true, there are many bee-keepers who are doing a fine business during winter in selling their honey in small lots to the local retail trade.

One of the things we have been trying to hammer into the heads of bee-keepers is the fact that honey should be sold *early*. While it can be disposed of to advantage in August, September, October, and November, there is not much doing after the middle of December; and honey that has not already been sold during the holidays is apt to have a slow sale afterward at reduced prices. In view of the fact that white clover gives indications of furnishing a liberal yield this coming summer it would seem advisable, as Mr. Hutchinson says, to get the honey on the market as soon as possible. There are many bee-keepers who wait until it is "convenient" to take it off their hives. They then sell when *everybody else* is selling, and when prices have a tendency to drop. They thus get into the fiercest kind of competition. "It is the early bird that gets the worm." No honey sells like fresh *new* honey.

THE OHIO LEGISLATURE PASSES AN EXCELLENT FOUL-BROOD LAW.

SOON after we had gone to press with the last form of our previous issue, word was received that our foul-brood bill had passed both houses; we stopped the press and squeezed in a one-line notice. From the earlier reports we were fearful that the bill would not even be reported out of committee; but, thanks to the energetic action of Senator Patterson, the father of the bill, and Representative Woods, who had charge of the bill in the house, the bill was not only pulled out of committee in both houses, but it was put on the calendar, and passed. The bill is now before Governor Harmon for his approval. We have written him a strong letter urging his support, and so also has the secretary of the Ohio State Board of Bee-keepers, Mr. Henry Reddert, of Cincinnati. We have every reason to believe that he will attach his signature, and the bill become a law. The bill was drafted originally by Dr. E. F. Phillips, of the Bureau of Entomology, Washington, D. C., and then it was modified by the attorney-general to suit local conditions.

Senator F. N. Patterson and Hon. Frank Woods, both leaders of their respective houses, deserve the special thanks of the bee-keepers of this State for the prompt and energetic way in which they pushed the bill during the last day or two the Legislature was in session. We were very fortunate

in the selection of our men to handle the bill. Considering the dead lock between the two houses at the time, we were exceedingly fortunate.

In brief, the new law provides that the Ohio State Board of Agriculture shall establish a Division of Apiary Inspection in the Ohio Department of Agriculture, and shall also appoint a competent entomologist who shall be chief inspector of said division. In this case, the Board will undoubtedly appoint State Entomologist Shaw, who, of his own accord, when we were agitating the question of getting a better law, offered us every assistance in his power. It goes without saying, that Prof. Shaw, if appointed, will do his part.

Among other things, the law provides that the inspector or his assistants, when notified in writing, shall examine all reported apiaries where disease is supposed to reside. After the first inspection he shall make a second inspection ten days later. Under the law, no one will be allowed to sell or barter, without the consent of the inspector, any diseased bees or appliances. It is further provided that no person engaged in rearing queens for sale shall use honey for use in making bee candy for mailing-cages unless it has been boiled for at least thirty minutes; that all queen-rearing apiaries shall be inspected at least twice a year.

For this year, at least, the Entomologist will not have any special funds to pay salary and expenses of special bee-inspectors; but he has kindly consented to have his regular nursery inspectors take on the additional duty of inspecting bee-yards. Another year, when the Department of Agriculture makes up its new budget, funds will doubtless be provided to take care of an inspector or inspectors who can devote all their time to inspection work. For the present, at least, we must not make too heavy demands on the chief inspector. It was thought best to get the law passed now, in order that localities affected by the disease might have the police power of the State back of them. It is unnecessary to say that local bee-keepers will see to it that the nursery inspectors, when they do come around, will be supplied with all the technical information they may lack in properly carrying out the provisions of the law.

TEN-FRAME HIVES VS. EIGHT-FRAME; FALL OR SPRING FEEDING.

THE following letter, received from one of the veteran bee-keepers of New York, and a man who has been connected with the supply business for the last twenty-five years, is of such general interest that we are glad to place it before our readers.

Mr. E. R. Root:—I have just received GLEANINGS for April 15, and noticed, on p. 241, your editorial in regard to ten-frame hives. I wish to say that the editorial meets my views exactly. When I first began keeping bees I used the ten-frame hives and had good success right along. About the time Mr. Heddon got out his sectional hive I changed to the eight-frame regular Dovetailed hive, having about 130 colonies. My luck seemed to leave me; but I continued with the eight-frame for about ten years.

I then changed back to the ten-frame, and, presto! my luck returned. Since then I have had good success. My specialty was comb honey. A few bee-keepers ask my advice, and I always recommend the ten-frame, but tell them that sales are mostly for the eight-frame, and they can take their choice. I also note your footnote on p. 249 in regard to spring feeding. This I have advised for a long time, and in accordance with your idea. I sometimes feel that you and I would agree on the care of bees.

Syracuse, N. Y.

F. A. SALISBURY.

It is our opinion that the great majority of the eight-frame hives now in use among the old-time bee-keepers continue to be used because of the fact that they can not afford to change over to the ten-frame size. This is only another way of saying that many of these men, at least, would change over to the ten-frame hives if they were to start over again.

We are coming more and more to the conviction that the ten-frame hive will hold its own anywhere at any time. In late spring an eight-frame hive will often be jammed full of brood. To put on an extra story to accommodate the queen gives too much room. Two extra frames, as can be given with the ten-frame hive very nicely, accommodate the average good queen. From extended travel and observation, covering a period of fifteen or twenty years, we have been slowly coming to the conviction that the eight-frame hive is just a little too small, and that the ten-frame is about right. If it is necessary to have a reduced body capacity, better by far make the reduction on *vertical* than *horizontal* lines.

It is a great nuisance to the bee-supply houses and bee-keepers in general to have two kinds—that is, two widths of hives, for the same kind and depth of frame. Every supply house must carry a full assortment of the two sizes. Somebody must pay for this duplication, confusion, and expense, and, naturally enough, it comes out of the bee-keeper. We hope the time may speedily come when there will be only one width of cover and bottom-board, one width of super and one width of brood-nest, especially since the varying capacities of brood-nests to suit individual and local needs can easily be taken care of by increasing or diminishing the depth. A ten-frame-width shallow or deep brood-nest will fit any cover or bottom-board or super, and this is a matter of supreme importance. One can work shallow brood-chambers, medium shallow, standard full-depth Jumbo, or extra-deep Langstroth hive-bodies and supers in the same yard without any inconvenience; but he can not work satisfactorily two widths of hives in the same yard.

THE ENFORCEMENT OF THE NATIONAL PURE-FOOD LAW; HEADACHE CURES, AND SHORT WEIGHTS IN FOOD STUFFS.

The food and drug department of the United States Department of Agriculture is evidently going after the adulterators of foods and drugs, especially those who have misbranded. As some of their decisions

bear upon the honey business, directly or indirectly, it will be proper here to refer to a few of them. For instance, one company has plead guilty, and been fined for sending out maple-sugar syrup, as the syrup contained almost entirely cane syrup and only a very small amount of maple syrup. The bottles were labeled "Cane and Maple Sugar Syrup;" but the words "Cane and" were put in small letters, so as to be inconspicuous. As this is contrary to the provisions of the national pure-food law, the authorities decided that the packages were branded and labeled so as to deceive and mislead the purchaser thereof.

Another concern was fined for selling packages of preserves that were short in weight. The label stated, "This package contains one full pound." This statement was false and misleading, in that each of said packages contained less than one full pound; to wit, an average of 14.5 ounces.

The "O. K. Headache Cure," claiming to cure any kind of headache, and perfectly harmless, "was misbranded in that the containers failed to indicate to or advise the prospective purchaser or consumer of said preparation that it contained alcohol and acetanilide, the presence and quantity of which substances are required by law to be declared on the package containing the same, and which was further misbranded in the following particulars, that it was not a cure for headache, and it was not perfectly harmless, because acetanilide, a dangerous drug necessitating skill and caution in the administration thereof, was present in said preparation."

There is provision in the national pure-food law by which the use of false geographical names is prohibited. It seems there are concerns that were selling Rocky Ford muskmelons and Indian River oranges; but neither the canteloups nor the oranges came from the localities indicated. The law holds that these geographical names should be applied only to the product of the strict area of melons grown in the Rocky Ford district of Colorado and oranges in the Indian River district of Florida. In brief, Uncle Sam says, "All labels must make no misstatement, either as to weight or character of the substances used in the food or drugs. If any substance is dangerous to life or health, the exact quantity must be stated on the label."

By the way, why should any one buy patent-medicine headache cures? There are records of a number of deaths occurring because the cures contained some deadly drugs that stopped the heart action and caused death. Bee-keepers do not need to be cautioned against headache cures more than any one else; but they should thoroughly understand that, when a label specifies one pound or any definite quantity of honey, there should be exactly that amount. A can or bottle that weighs gross a pound, and contains net 14 ounces of honey, when labeled as containing a pound, is a violation of the national pure-food law.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

THE CENSUS man struck a rather bad year for bee-keepers, didn't he?

NECTAR contains 93.76 per cent of water; and honey, 20.6 per cent, according to German official investigation. — *Lpzg. Bztg.*, 42.

LUDWIG says, *Am. Bienenstand*, 73, that moldy combs in winter may be due to hives of fatty pine. That seems to favor Doolittle's idea that unpainted hives are better for wintering.

BABY NUCLEI swarm out, page 279, Dr. Kramer says, *Schweitz. Bztg.*, 178; take bottom off nucleus hive; set it over an empty one, and the baby will build and brood with no thought of swarming.

WESLEY FOSTER, I wonder if your section-dampener, p. 293, is as good as a fine stream of hot water from a fountain syringe. It does fair work on a whole package of sections, and splendid work on half that depth.

"WITH AN eight-frame Langstroth hive . . . it is well to use the excluder as a precaution against brood in the sections," p. 300. In this locality no excluder is used between eight-frame hive and sections.

SOME omit breakfast, some omit supper. I've tried both ways; don't know which is best, or whether it's better to eat three meals, and cut each meal in two. The thing is, don't eat too much, and chew, chew, chew.

THE PLAN outlined by Louis Scholl, page 246, selecting his best queens for his queen-yard and breeding from the best, will in a few years give him bigger crops. And the man with only 20 colonies can do something in the same line.

D. M. MACDONALD, why can't you stay in Scotland, where you belong, without stirring up trouble on this side, p. 296? I've troubles enough of my own with another descendant of Scotland who objects to my introducing fresh Italian blood to work out the black blood.

BEEN TRYING a pair of home-made gloves made of heavy woolen yarn. The bees fly at them furiously, and try to burrow in them. Knew that before—did you? Well, here's something perhaps you didn't know—at least I didn't—for all their bluster, never a bee really stings, never one! They pepper a wool hat with stings, why not the gloves?

Later.—Got stung three times in half a day on the identical spot inside of a finger. I think the glove was thinner there. But why don't they leave any stings on the back of the hands or fingers?

"SELLING patent-right territory" is bunched among objectionable things formerly advertised, page 241. What's wrong

about selling patent-right territory? [Nothing is inherently wrong with the *principle*; but years ago the *practice* was very much abused—so much so that it has practically gone out. But, say, doctor, why don't you answer this question? You lived in the days of patent-right selling, and are supposed to know more about it than the writer.—ED.]

PERIOD of bloom three or four weeks earlier than usual. Duchess apple 41 days earlier this year than last. But after a long spell of summer came snow and ice—thermometer 21°. Some trees were utterly denuded, same as in winter. Fruit is about all killed; but since thawing out, bees still work on apple-blossoms, which are black at heart. Bees stood it grandly; are now at least three weeks in advance of any previous year. April 29 honey shook as in the midst of a heavy clover flow.

REPLYING to my question, p. 244, you say, Mr. Editor, that foul-broody entrances and alighting-boards should be disinfected. Does that mean that the danger-line ends there, and that there's no need to disinfect further out? What about the millions of spores scattered all over the ground and on top of all the hives in the apiary? [Spores on the outside of the cover or on the ground would probably be killed outright by the action of the sun. Disinfection of the interior of the hive or entrance would, we think, be sufficient.—ED.]

THE BEDFORD anti-swarmling device, page 299, ought to hinder swarming just as my bottom rack does, *provided* the entrance under the device is large enough. But placed in front of a hive as shown on page 295, I should expect it to increase swarming, just because it decreases ventilation. The Bedford device, p. 299, is O. K.; but instead of holes at the back end why not have it more open, same as front? The Weishaupt arrangement, p. 299, is only to keep out robbers and mice. But I never knew either robbers or mice to trouble a hive raised on blocks, and the arrangement shuts off half the ventilation. But don't forget, good friends all, that a 1/4-inch opening at the upper back end of the hive is as good as adding an inch at the bottom.

THAT BALLING business, page 244. As I understand it, E. Franke watched many cases of queens returning from wedding-flights into one-frame fertilizing-hives, where he could see them through the glass sides, and in every case the queen was balled unless she returned without having mated. Did Mr. Pritchard see the queens after they entered, so as to be sure they were not balled? I've seen bees many a time chasing after a queen to pull away the filament, but I don't know that the queen had not been first balled for a time. [Mr. Pritchard has raised anywhere from 1000 to 3000 queens in a season. In the height of the queen-rearing work he is constantly opening baby nuclei. If there were any such balling as Mr. Franke refers to he would have seen it, we would think.—ED.]

Siftings

By J. E. CRANE, Middlebury, Vt.

Dr. Miller, page 4, refers to the Dadants feeding granulated honey. I will say that I have fed it with very satisfactory results in the spring by placing it on top of frames under a warm cushion.

I can not quite agree with Mr. Byer, page 780, Dec. 15, that honey is unnecessary in a syrup made of two parts of sugar to one of water, for I have seen quite too much that was granulated in the combs when fed without honey.

On page 6 Mr. Wesley Foster's remarks as to the value and advantages of careful grading are well taken. Although there may be local markets that do not require so careful grading, for our larger markets the more careful the grading the better.

Page 4 Dr. Miller says, "If fielders go straight to the supers it seems they might take their pollen there too instead of dumping it in the brood-chamber." Well, my bees often store pollen in the supers, and I believe their methods of storing fresh nectar are very variable.

Decidedly interesting is that account of putting up bees to ship by the pound, with illustrations, pages 50, 51, 52. I do not believe that half the praise has been given the swarming-box it deserves. I believe it should be given a much larger place in our practice than it has heretofore occupied.

If any one thinks that bee-keeping lacks excitement, or is monotonous, let him look at that picture on p. 74, Feb. 1, and read Mr. Holtermann's description of moving bees. I have always moved in cold weather when conditions are more favorable.

Mr. Boardman's method of preventing granulation seems a good-sized step in advance along these lines. He does not say, p. 770, Dec. 15, just how much sunshine is required, nor the temperature, nor how soon after the honey is extracted the treatment must be applied. My experience has not been satisfactory, and I await with a good deal of interest more complete instruction.

Mr. Foster has given us, p. 138, Mar. 1, the best reasons I have seen for using a double-tier shipping-case. The fact that the smaller size will not allow the thin covers to bend down is a decided advantage; also that they will sell for from 10 to 15 cents more per case. Queer; but here in the East the markets have seemed to prefer single-tier cases,

and yet I supposed the Colorado honey was marketed in the East.

Dr. Miller, page 755, Dec. 15, says that we should have an entrance $\frac{3}{8}$ inch deep and one inch wide for every comb covered by bees for an outdoor entrance. I rather think that depends upon circumstances. Such an entrance would be none too much, surely, with sealed covers; but with absorbent cushions above, $\frac{3}{8} \times 2$ inches is enough for the strongest colonies.

Absorbing material or cushions are taken up, pages 786, Dec. 15, and 27, Jan. 1. A great deal I find said against the cushions because they absorb the moisture. It certainly seems better to have it in the top packing than on the combs of honey. As soon as warm weather comes they dry out; but one thing should be considered—it takes very little opening on top to let the moisture escape. Boards laid on loosely will answer every purpose.

Mr. Pouder's description, p. 18, Jan. 1, of liquefying granulated honey in hot-water tanks, makes one want to go a good way to shake hands with him. I am sure he could never have written such a description of the vexations of liquefying honey without the experience. I am heartily glad he has something better. We have no gas in this town, and there would seem to be objections to a gasoline-stove; and I would inquire if an oven could not be heated sufficiently with a coil of steam-pipe to melt granulated honey in five-gallon cans.

C. E. Millard, p. 44, Jan. 15, complains bitterly of the ravages of the wax-moth, and I was particularly interested in the editor's footnote in which he says, "Since the Italian bees have replaced the old-fashioned black bees, most of the trouble with moth-worms has disappeared." Would not this be equally applicable to foul brood, at least here in the East? A gentleman from the southwest of our State, at our annual meeting told me that he had had little or no trouble with this disease, as he kept Italian bees, while his neighbors who kept black bees lost considerably, and were greatly injured by it.

On p. 27, Jan. 1, I mentioned the distance bees fly for honey. Recently at our State convention Dr. J. M. Thomas, now president of Middlebury College, told how, more than twenty years ago, he kept bees on the west shore of Lake Champlain, about one-fourth mile from the lake, and lost many bees in crossing the lake, which was, at that point, some two miles wide, the bees crossing to visit the rich white-clover pastures on the Vermont side of the lake. He moved his yard of bees some three-fourths of a mile further from the lake, and his bees were not tempted to cross. In other words, his bees would go $2\frac{1}{4}$ miles without any intervening pasture, but would not go three miles.

Bee-keeping in the South-west

By LOUIS SCHOLL, New Braunfels, Texas

A WARNING TO SHIPPERS OF HONEY; A PLEA FOR BETTER SHIPPING-CASES AND CANS.

Last year the writer called the attention of bee-keepers, especially those of Texas, to the importance of better and stronger shipping-cases or jackets for shipping our honey in cans. Only slight attention, comparatively, was paid to this note of warning; and while a few bee-keepers took up the matter and used better cases, the majority contented themselves with the use of such as are generally put out. Most of these are such frail affairs that they do not carry the heavy cans of honey shipped in them, and reach their destination in the most dilapidated condition. The engraving on page 322 shows only a few such weak cases, taken from a shipment of more than a dozen, all of which were literally torn to pieces, not only exposing the cans to injury, but allowing them to be broken. One leaked very badly, and the results would have been worse had not the honey been mostly granulated, preventing a greater leakage.

While the individual bee-keeper does not have very much loss during a season, which accounts for the slight effort made toward a reformation in better honey-shipping packages, the matter as a whole is a very serious one, as we must consider the many thousands of individuals with the thousands of shipments, many of which are subject to some loss in one way or another. It is impossible to comprehend the extent of these damages to honey shipments without studying the facts in the case. Although I have had an occasional shipment damaged to some extent, in spite of the extra care taken in preparation, it had never occurred to me that more than twice the number of shipments made by us were damaged more or less. This was due to the reason that many consignees do not report back such damages, but put in a claim for recovery at their end of the line. This was at once apparent to me when I saw a list of shipments for which such claims had been put in; for out of the number on the list half a dozen shipments were our own, and of which we had never heard any complaint for damages.

To show the importance of this whole matter I will submit here a copy of a letter received some time ago from an official of *only one* railroad calling my attention to this matter. Heretofore I had not known the seriousness attached to this matter. The letter will explain the situation:

HANDLING SHIPMENTS OF HONEY.

Mr. Scholl:—I submit herewith a file of correspondence which I am assured is of vital interest to the bee-keepers, or at least to the shippers of honey. The losses of honey in shipment are so great that it not only costs the railroads a great deal of money

each year, but in the end works to the detriment of the man who produces it.

I do not know just how the losses are going to be avoided; but I think that some improvement in the package can be accomplished; and to make this improvement the parties producing the honey must know the weakness of the package used.

I am submitting this correspondence so that you can see the condition of quite a few shipments when they are only half way to their destination. The loss in the rest of the journey can not be expected to be any less. Doubtless a great many shipments are delivered to the consignee with only slight loss, for which no claim is presented, and the retailer stands the loss out of his profits, and naturally the reduction in the profits to the retailer turns him against the commodity on which the profits are unsatisfactory.

I do not know that you can do anything to improve the situation. If you can not, no harm can come from calling your attention to the losses now sustained; but I hope you will be able to accomplish some improvement. After the papers have served your purpose I shall be glad to have you return them to me with such comments as you may have to offer.

Yours truly,

The papers referred to are copies of reports of honey-shipment damages, and claims covering a period of only 27 days, between August 14 and September 10; during which time there were twelve in all. A copy of each of these damaged-honey shipments was appended to the above letter. Each one showed exactly the condition of the shipment upon arrival, extent of the damage, etc. Weak cases, not strong enough to hold as heavy contents as cans of honey; leaks on account of improper soldering; tops worked loose, and contents or part of contents leaked out, etc., were the checks made on these reports.

If we stop to think for just a moment, the short time in which these reports were made, and by only a single railroad, and that after the main shipping season, it must be admitted that the situation is a serious one indeed.

It must also be borne in mind, in connection with the above shipments, that these checks were made when the shipments were only half way to their destination. The shipments reported in the above were from different parts of the State, and from nearly as many shippers, through Fort Worth, Texas, where the checks were made. In what condition these shipments reached the consignees it is hard to say.

Now it is up to the bee-keepers. What are you going to do about it? I have called attention to this before, and it is my hope it will not be in vain this time.

New Braunfels, Texas.

[Mr. Scholl is right. It is strange that a bee-keeper will produce a fine article of honey, and then put it up in a cheap or second-hand package. Cans that have been used once are weakened or rusted. The user of them saves a few cents on the package, and loses dollars where he saves cents. The honey leaks, and trouble occurs between the railroads, the honey-producer, and the purchasers of the honey. No wonder he fails to make a satisfactory settlement with either. Honey, if it is worth any thing, should always be put in *first-class new packages*.—ED.]

Conversations with Doolittle

At Borodino

EARLY WORK IN THE SUPERS.

"How can I get my bees to enter the supers early in the season? I know that bees will begin work sooner on empty combs than when they are obliged to build their comb; but I am told that comb foundation will take the place of drawn combs."

"It will when nectar is coming in from the fields fast enough so that the bees begin to secrete some wax of their own; but when the honey-flow begins very gradually, and continues slow, we very often find that colonies provided with combs will make quite a show in the surplus apartment before those with only foundation to draw out, or those which are obliged to build their combs, make any start at all."

"But is it not just as well to leave the supers off during such slow work, allowing this little to be put in the hive for food for the larval bees?"

"No, not by any means. Such a course encourages swarming, which is a detriment in our modern bee-keeping. It is of great importance that the bees begin to put honey in the surplus apartment at the very first of the honey season. They work much better afterward when their first honey goes above, and they are not nearly so likely to fill the brood-combs with honey, and thus curtail the brood through lack of room given the queen in which to lay. Here is one of the great problems in apiculture; for *with the crowding of the queen comes a desire to swarm, which swarming fever is against a good yield of honey, even if the brood was not so curtailed as to injure materially the prosperity of the colony through the whole season, which is generally the case.* By placing a hive of empty combs above each colony as soon as it becomes strong enough to receive them, work will be begun there long before any colony thinks of entering the sections. Then as soon as the bees are well at work in these combs they are taken away from them, and sections put on, in which the bees go to work readily, especially if these first supers of sections contain a few baits. The bee-keepers of nearly a quarter of a century ago found out that, if a hive of drawn brood-combs was placed on a strong colony quite early, the bees would take advantage of them and store honey before they would go into supers with baits. Then after these combs were taken off the bees would at once go into the sections, store first in the baits, then draw out the foundation in the sections next to these, and soon work would be going on throughout every section in the super; swarming would be retarded, and a good yield of section honey assured. The combs in which the bees were at work were put on other colonies not strong enough to occupy

upper stories when this work first began; and when all had been brought up to the occupying of sections except the very weakest, these combs, now pretty well filled with honey, were piled from two to four stories high on these weak colonies, and left for extracted-honey production."

"Was the plan a success?"

"It was very much in advance of the former way of working where sections were only starters or only foundation were put on the colonies after they got nearly or quite strong enough to swarm; but it lacked some of the better elements of our present-day bee-keeping, the turning of all the honey stored by the bees during any and all years, which was not needed by the bees themselves, into the sections, and that without the necessity of having *any* swarms. A plan for doing this is given in 'A Year's Work in an Out-apiary.' As soon as several of your colonies are strong enough so that a hive containing the full number of worker combs can be put over them without injuring their prosperity at brood-rearing, take off the winter covering from them and first place over the brood-chamber a queen-excluder; on this the hive of combs, and put the cover over the whole. The bees will now go to work in these combs; but instead of taking them off and putting sections in their place, as the earlier bee-keepers did, leave them till the first honey harvest opens, or till white clover is opened enough so the bees have commenced to work on it quite freely. As a rule, no preparations for swarming will have commenced so far, which is better than waiting later. Now set the upper hive down in place of the lower hive and put a super of sections containing baits on top, and on this super place another filled with sections having foundation in them. Next, shake and brush all the bees off their combs and out of the hive, which, up to this time, has been their brood-chamber, right in front of the hive you have just put the sections on, into which they will run as fast as you shake them off their frames of brood. You now have all the bees which were in both hives in what was the upper story a few moments ago; and as the bees have been used to working and carrying their honey into the hive above, so they will continue, going immediately into the sections; and as the queen lays, the honey stored in these combs will go into the sections, together with that coming in from the fields, while the colony finding itself without brood will go to work the same as a newly hived natural swarm, so that all swarming is unthought of, and a large yield of section honey results. Put the queen-excluder you now have out of use over some weak colony, and on this put this hive of beeless brood. And as the season's work progresses put on more and more. I often have hives so used till there are five hives like this all in one pile. And these are the combs which are used to go on top again the next year, the honey which will be stored in them being of advantage the next season."

General Correspondence

THE ESTABLISHMENT AND MAINTENANCE OF A BROOD-CHAMBER.

Eight vs. Twelve Frame Brood-chambers.

BY R. F. HOLTERMANN.

I have used the small and the large brood-chamber, and I should, therefore, be able to speak from an unprejudiced standpoint. This great and important question in bee-keeping in the attitude of bee-keepers toward it reminds me of the "chamber of torture" of ancient times, with the exception that, in the former, there was no way of escape; in the latter, there is left an open way of escape, and they who remain in it do so of their own will.

In my estimation the small-brood-chamber men are in the chamber of torture, the walls of which are gradually but surely closing in. These walls are made up of public opinion, and they are strengthened and reinforced day by day by recruits which come by the way of escape from the chamber itself as it is gradually crushing those who still maintain the ground of adequacy of an eight-frame Langstroth brood-chamber.

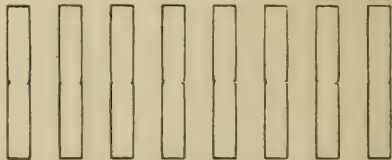
Say what we will as year after year goes by, the question of the size of brood-chamber becomes less and less a question. Apicultural writings, the result of debate at conventions, votes taken at conventions, an examination of the apiaries and methods of progressive bee-keepers, and the trend of orders from supply-dealers, all prove that the sweep with accelerated force is toward the larger hive, and those who advocate them can well in patience await results. If one will look over the writings upon this question in recent times, in my opinion he will find that the large-hive men have appealed to reason, while in some instances the other side has made statements in which ridicule has had a prominent part. For instance, J. E. Hand, *GLEANINGS*, p. 695, last year's volume, calls the twelve-frame-hive men "honey-slingers." Well, I have always tried to be a man who thought in this world's matters for himself and did not shrink from standing alone at the expense of ridicule. They laugh best who laugh last, and I have already enjoyed many a broad smile in that way.

As I stated at the recent Chicago convention of the National Association, so let me say now, when we study apicultural catalogs and literature, the number of combs in the bottom story makes up the size of the hive, and the number of combs of brood makes the size of the brood-chamber. The English language allows no other interpretation. If the number of combs of brood in the hive really makes the size of the brood-chamber, the difference between a twelve-frame or larger bottom story and the eight-frame bottom story on the tiering-up system can best

be illustrated by the following: In times of intense heat, especially in eastern countries, one man has standing over him a hireling who laboriously, and by might of arm and expense, sways back and forth a fan to cool his heated brow, while his neighbor can turn on, by means of a button, the electric current which regularly, steadily, and at less cost, runs a fan until his good pleasure wills it otherwise. In the manipulation of the small bottom story and the taking of brood to the super we have a far more laborious and expensive process, to say nothing of more radical departures from normal lines. To place brood in an upper story, be it shallow or deep, entails greater expansion and inconvenience to the bees in feeding the larvae and maintaining the heat thereof than that obtained by the adding of combs to the lower story. Then, too, it is more normal, and less of a break to the walk and ways of a queen, to pass from the 8th to 9th and 9th to 10th comb, and so on, than for the queen to leave, as it were, *terra firma* and pass up to the unexplored regions above. The very fact that bee-keepers are found who argue that the queen rarely goes out of the chamber she is in, and therefore queen-excluders need not be used, is an argument that it is more natural for her to move *sidewise* from comb to comb rather than pass from one chamber to another.

No matter what the assertions of all the bee-keepers who ever wrote may be, I know that which I have seen again and again, and that which others have admitted to me, that a queen, when she passes from one chamber to another, does not return as readily to the first as she would pass from one comb to another in one brood-chamber. Her inclination during the honey-flow is to deposit the eggs in that position where the brood will be as close as possible to the honey above; and the result is that she loses valuable time while being forced out of regular paths. Sidewise she readily passes from comb to comb; but up or down she follows the comb; and when she comes to the end of that comb, either up or down, her journey ceases, and she is not so ready to pass a piece of wood, an empty space, and another piece of wood to another comb.

The large-hive men are wise enough not to thwart bees in their natural instincts any more than is necessary to serve our purpose, and therefore we place frames side by side until we have twelve, rather than form a brood-chamber, like



the diagram, or double its capacity at one jump by clapping one shallow chamber on top of another.

To be continued.

[When Mr. Holtermann prepared this article he had not seen the editorial on p. 241 of April 15th issue showing the undoubted tendency of bee-keepers toward the ten-frame rather than eight-frame hive; neither had we seen his article.

While a twelve-frame-hive capacity may be all right, it does not fit standard covers, bottom-boards, comb-honey supers, nor extracting-supers already on the market. Strong arguments can be built up in favor of the same capacity of hive with ten frames, two inches deeper than the regular standard Langstroth, sometimes called the Jumbo. As the Dadants have pointed out, these large frames of Quinby dimensions are splendid for the rearing of brood. In our judgment it is far more important to have a hive that will fit standard supers, covers, and bottom-boards, than one that will fit some standard frame. One can adopt the Jumbo hive and still keep on using the standard Langstroth ten-frame hives and supers. He can use Langstroth frames in Jumbo hive-bodies, but, of course, he could not tier up very well using such frames, nor would it be necessary for him to do so. If a big hive is a honey and a money getter, if it is a non-swarm, or practically so when operated for extracted honey, then all the arguments that our correspondent has made in favor of the twelve-frame Langstroth will apply with equal force, and more, to the Jumbo, which is, to all intents and purposes, the modern Quinby frame. The Jumbo frame is nothing more nor less than the Quinby having Langstroth length of top-bar and bottom-bar, but Quinby end-bars. In favor of the Jumbo we might say further that the Quinby Jumbo hive, having larger comb capacity per frame, requires less frame-handling. We are not quite prepared to admit that a queen will not go readily up into a second story of a sectional brood-chamber. If a colony is strong enough, if the queen is cramped for laying room in the lower section of a sectional hive, she will have no hesitancy, according to our experience, in going into the next story.

Taking it all in all, one should study his locality very carefully before deciding on a larger brood-nest than a ten-frame standard Langstroth. If extracted honey is the object we fail to see that enough would be gained to offset all the inconvenience of being out of tune with the rest of the bee-keeping world, to say nothing of the added expense of extra-wide supers, covers, and bottoms. If that capacity is better, adopt the Jumbo size of hive that will fit standard Langstroth ten-frame supers, covers, bottoms, honey-boards, hive-stands, winter-cases, and drone-traps.

The Jumbo is a standard hive, obtainable, we believe, from most dealers; while the twelve-frame Langstroth is sold nowhere, and would have to be treated as an odd-sized hive. This would necessitate in the height of the season delay, and an added cost because it is odd-sized. One should consider the matter in all its bearings. See editorial on page 307 this issue.—ED.]

DIRECT INTRODUCTION BY THE FAST-ING METHOD.

Laying Queens or Virgins Allowed to Run Directly into the Hive.

BY J. M. BUCHANAN.

As the time approaches for requeening, the bee-keeper looks about for the best method of introduction. It is commonly conceded that the plans in general use are not satisfactory. Dr. Miller asks for a safe method, and is told that there is no absolutely sure plan. As there is nothing about the business of bee-keeping that is absolutely sure, that is perhaps true. During the past winter several new methods, or variations of old methods, have been exploited in the bee-journals, all of which were more or less fussy, and none of which gave promise of much improvement over the plans in general use. For several years I have been using a plan which is at once easy, quick, and sure. As I have tested it thoroughly I can recommend it to the bee-keeping public as something of real merit. Mr. N. O. Walker, President of the Tennessee Beekeepers' Association, and a bee-keeper of forty years' experience, says of it, "This plan is far ahead of any other I have ever used."

Now for actual results: Out of 250 queens introduced by this method during the past three years I have lost only three, and those were given to laying-worker colonies; while during the same time, and under practically the same conditions, I have had about twenty per cent of failures by the ordinary cage-and-candy plan.

Here is the direct method, as practiced in my own apiary: About the middle of the day the old queen is removed; or if the colony has been queenless for more than twelve hours the combs are closely examined, and all queen-cells cut out. This is important. Now get a piece of wire cloth about three inches square. Roll this into the form of a cylinder $\frac{3}{4}$ inch in diameter. Tie a string around it, and insert a cork in each end. This is our "introducing cage." Just before sundown place the new queen, alone, and without food, in the introducing-cage, and place this out of the reach of any bees, and let it remain thus for three-quarters of an hour. Now the hive-cover is partly removed so as to expose one or two frames, and a very little smoke blown in to drive back the bees. Take out one of the corks of the cage, and let the queen run down between the frames. Blow in another whiff of smoke and close up the hive, and the operation is done.

It seems that the scent of the queen has less to do with her acceptance by the colony than her behavior on being released; if she is frightened, or acts in a haughty or insolent manner, the bees recognize her as a stranger, and promptly sting or worry her to death. If, however, she is lonesome and hungry, as is the case when introduced by this method, instead of running as if fright-

ened, or passing by with an arrogant air, when she meets a bee she humbly begs for food. This is always given, and so all is serene. It is, perhaps, best, though not imperative, for the colony to remain without a queen for half a day, or until they realize their queenless condition. However, I have on several occasions removed the old queen and put in the new one at the same operation, and the bees did not seem to know any difference. Either laying queens or virgins can be successfully introduced by this method.

Not the least advantage of this plan is the small loss of time in egg-laying, as compared with some of the older methods, and this is an important consideration where the queen is introduced before or during the honey-flow.

Franklin, Tenn., April 25.

[This is almost identically the same plan of introducing that is known as the "fasting" method, first fully worked out and placed before the public by Mr. Samuel Simmins in his book, "A Modern Bee Farm," in 1887. It has been continued in all the subsequent editions of the same work. We haven't a doubt that so far as Mr. Buchanan is concerned that the plan was entirely original. While the Simmins plan is not exactly the same, it is so near like it that it may be considered as one and the same. For the purpose of comparison we reproduce the Simmins plan here:

SIMMINS' "FASTING METHOD."

long since practiced by myself, and first mentioned in my pamphlet upon Direct Introduction, I have since improved by inserting the queen at night. The three things of importance to be observed are as follows: 1. Keep the queen quite alone for not less than thirty minutes; 2. she is to be without food meanwhile; 3. and to be allowed to run down from the top of the frames after darkness has set in, by lamplight. It is also important that the same receptacle be not used twice over for holding the queen during the thirty minutes' probation without first being scalded or otherwise cleansed. Of course, a metal cage is easily made clean, though there is no objection to the cheap "safety" match-boxes so commonly in use, as there is nothing obnoxious about this kind. My own practice is to carry the queens in the vest pockets, in small tubular cages made of fine perforated zinc or tin, one end permanently closed, while the other end is pressed into a piece of foundation after the queen is in. When ready, remove the foundation and let her run into the hive.

It will be noticed that Mr. Simmins says the queen must be kept alone for *not less than thirty minutes*, while Mr. Buchanan specifies forty-five. And, again, Mr. Simmins directs that the queen be run into the hive after dark, by lamplight, while our correspondent says it should be done just before sundown. We will have more to say about night introduction later. But Mr. Simmins was not the originator of this idea of fasting the queen before introduction. We find references to it in Langstroth's old work, "The Hive and the Honey-bee," and even in earlier writings.

This fasting method of introduction has been discussed in this journal at different times for years back. For example, there is quite a discussion of it on pages 123 to 126 of GLEANINGS for February 1st, 1905. A

further article appears on page 598 of the same volume. But because the plan is old, that does not necessarily signify it is not good. We have used it off and on to a considerable extent. In fact, our Mr. Bain, at the home yard, says he always uses it when taking a laying queen out of a nucleus and introducing her to a full colony in *the same yard*. We will suppose that in one yard bees are working on goldenrod, in another yard bees are doing nothing. To take a queen from the first-mentioned yard and try to introduce her by the fasting method in the other yard might result in her loss. Why? Because the aroma of the goldenrod would possibly make her a *persona non grata* in the yard where there was no such odor. Yes, indeed, the scent factor is very important and can not be overlooked. But he says he would by no means recommend that plan for the average person to follow out, as so much depends on conditions and the time of the year. In connection with this we may possibly lay down some general principles that may prove helpful.

1. When a little honey is coming in, it is much easier to introduce and unite bees than during a dearth.

2. A queen in the height of her egg-laying will be accepted far more readily than one that has been deprived of egg-laying, as in the case of one that has been four or five days in the mails.

3. Some colonies are more nervous than others. To open a hive of such on an unfavorable day might arouse the inmates to a stinging fury. Indeed, such colonies will often ball and sting their own queen when the hive is opened if the day is unfavorable.

4. It is easier to introduce toward night, or after dark, than during the day. The reason of this is that after dark the excitement of the day has subsided. There is no chance for robbing and no reason for vigil. In short, bees are not *expecting* trouble and are not inclined to make any.

5. A fasting queen, or, rather, a queen that is hungry, will usually ask for food, and hence will generally be treated more considerately than one that shows fear or fight.

6. The scent factor can not be ignored. It is because of this variety of conditions, which the average beginner and many old bee-keepers do not understand, that we would not recommend the fasting method, in preference to the caging plan. Mr. Bain uses either, according to circumstances; but with either he says he loses *no queens*. Right here he asked us not to make this statement, because he thought he would not be believed; but we know him well enough to say that he would not misrepresent the facts.

It is possibly true that, when the bee-keeping public becomes a little better educated, it might be safe for queen-breeders to advise the fasting method of introducing rather than the cage-and-candy plan. If they were all like Mr. Buchanan, and other conditions were suitable when the queens were received, we might recommend that plan;

but we doubt if it will ever be safe to substitute it for the cage-candy plan for *queens received through the mails*. *Don't forget that such queens are much harder to introduce than those fresh from a nucleus in the same yard.* This is the reason, we suspect, why Mr. Buchanan was so successful. If he had attempted that number of queens received from the mails he would have had a much greater percentage of loss.

In the mean time we are glad to get this report from Mr. Buchanan; and in order that we may know how far the fasting method has been successful with others, we solicit reports.—ED.]

QUEER CLUSTERING-PLACES OF SWARMS.

BY W. A. PRYAL.

Bees, when swarming, are apt to alight in any place; hence we know of the colony of bees that occupied the lion's carcass, as related in the story of Samson, as well as many instances in modern times where they have preëmpted some queer homes. It was only the past spring that I read of a swarm in one of the cities of the State of Washington that alighted on the trolley-pole of an electric car standing at the end of its run. Then, elsewhere, one took possession of a street-car and sent the passengers scampering in every direction. Then we have heard of bees going into caves, rocks, holes in the ground, and into hollow trees, chimneys, etc. The past spring one of my swarms chose to alight as shown in the accompanying half-tone. We have a small patch of red raspberries, some of the canes of which are supported by wires running lengthwise of the rows. The wires are carried by small posts driven at convenient distances, and to these are cross-arms, at the ends of which the wires are attached by staples. It was on one of these wire-supporters that the swarm mentioned alighted. The wire on the left, as well as the berry-vines, had to be removed in order to get a good view of the swarm.

It is a rather novel position for a swarm of bees to assume, hence my sending you it as a curiosity.

Here I might remark,

without trying to be unduly "punnish," if I may be allowed to use such a word, the bees of the swarm shown had not a cross disposition, though they assumed a cross position.

HIVING BEES MADE EASY.

One day during the past swarming-season I had several swarms issue the same day in quick succession. The first alighted on the lower branches of a rather young cherry-tree, so that it was an easy matter to secure them with the aid of a short step-ladder. Instead of using a basket into which to shake the swarm I took a pail or bucket made out of a kerosene-can. I had hardly shaken the bees on the cloth upon which I set the hive I intended this new swarm to occupy, when I discovered a second colony sending forth issue. I knew at once where these swarming bees would alight or make for. I lost no time in gathering the cloth about the hive, thus securing the bees in a



NOT CROSS BEES BUT A CROSS OF BEES.

net, as it were. Before I lifted the hive from the ground to remove it to the stand I intended it to occupy henceforth, some of the bees from the second swarm began to cluster on the cloth. I brushed them off and then went about some operations that required my attention. In the course of five minutes I looked over to the aforesaid cherry-tree to see what size of swarm I was getting. Lo and behold, there was no swarm! Closer observation, however, revealed the fact that there seemed to be a goodly number of bees flying about the old oil-can I threw on the ground beneath the tree after I emptied it of the bees I shook from the tree so soon before. Approaching to investigate, I found that the entire swarm had taken possession of the inside of the can, with the exception of a few bees which were hastening to enter. I threw a sack over the top of the can preparatory to getting the camera. When I was ready I partially uncovered the bee-container. Of course, I was not able to show the large swarm that clustered within; but enough bees are shown clinging at the top on the outside to show that something was doing *inside*. It was but a few minutes after the camera's eye winked that I had those bees running into a nice comfortable dovetailed hive. Really, it seemed to have all been done in the twinkling of an eye.

Oakland, Cal.



A SWARM THAT CLUSTERED INSIDE AN OLD OIL-CAN.

THE AUTOMOBILE AS USED BY AN EXTENSIVE BEE-KEEPER.

Some Figures Showing Saving in Time and Labor.

BY HENRY STEWART.

[Mr. Henry Stewart is one of the extensive bee-keepers of the country, owning and operating a series of outyards. His experience with the automobile for outyard work will be particularly seasonable and valuable, because the matter of getting to and from outyards without wasting valuable time is of paramount importance.—ED.]

For carrying supplies to and from beeyards I use a Buick automobile, which I find most satisfactory. There are seats for three persons, the small seat behind forming the cover of the tool-box. This I can remove by taking out the hinge screws, and with 2x4 pine pieces I build a platform large enough to take six eight-frame supers without piling them up. This framework just fits in between the fenders over the rear wheels, and it rests on the top of the tool-box. To support the load I extend the two main 2x4's of the frame under the front seat, while at the rear two bolts through the steel frame of the machine hold every thing secure.

To prevent the supers, etc., from shaking off the platform, I have stakes that fit in sockets in the framework. These stand as high as the top over the front seat, and are fastened by straps to the top. When I am carrying a heavy load a rope is placed around the stakes and held by means of hooks to make every thing secure. To

change the car from a passenger vehicle to one capable of carrying a load, as described, requires about five minutes' work. The load shown in the engraving is made up of sixty 28-section supers. I can travel with the load at the rate of from twelve to twenty miles an hour, and I carry any thing that I could carry in any vehicle of like capacity.

The apiary furthest away is twelve miles from home. To go to this yard with a light load and a team requires two and a half hours with good average driving, with another half-hour for unloading, driving to the barn, putting up the team, etc. Then at noon I have to go back to the barn and feed the team before I can go back to work. At night there is another delay in hitching up. Then if I wish to carry any thing from the yard I must either stay until dark or carry it a safe distance from the bees, and then get it loaded in a hurry before any angry bees have begun to worry the horses. I find that at least six hours of the time is spent going and coming, with the extra work made necessary because of the horses, hitching up, etc.

With the auto I make the run in 45 minutes, and go right up to the bees, turn off the switch, and in five minutes can be at my work. At noon I jump into the car, go about 80 rods to dinner, and when I return I can run right up among the bees again and have no fear of any thing. I put in a full half day's work in the afternoon, crank up the machine, and in 45 minutes am at home getting ready for supper. I save, therefore, four and a half hours' time on a trip.

For my heaviest hauling I use a farm team; but for most of the road work I use the auto, and find the saving of time, when work is pressing, a most valuable feature.

Prophetstown, Ill.

[Mr. Stewart's experience has been quite in line with our own. For the last five years we have used the automobile in going to our bee-yards. It has proven to be reliable; and as a means for getting to the yards quickly it has no equal. Where a man runs a series of outyards a machine will enable him to take care of more bees than he could possibly do in the old-fashioned way with a horse and buggy or a horse and wagon. If his time is worth any thing this is a big item.]

As Mr. Stewart says, there is no danger from stings; and the modern automobile, if one has ordinary skill and mechanical sense, will give him no trouble in handling, providing he has a standard make. In this connection it is fair to say that some persons would never be able to run a self-propelled vehicle, because it is not in them to run or drive it. An automobile is something like a fractious horse—it requires a little skill and a little experience to handle it.

We are just beginning to test the motor cycle for outyard work. While it is a splendid one-man machine, it can carry but a very small amount of luggage; and its capacity is, therefore, somewhat limited. But there are conditions under which the motor cycle will do quite as much work as an ordinary automobile at far less initial cost and

far less cost for maintenance. Brand-new machines can now be had for anywhere from \$175 to \$250. We are testing a Harley-Davidson that sells for \$210. As soon as we have had more experience with it we will give our readers the benefit of the information.

In the meantime we are fully convinced that some form of self-propelled vehicle will be almost a necessity for outyard work, especially if there be as many as four or five apiaries, some of the furthest of which are ten or fifteen miles from the home yard. In order to get good locations it is sometimes necessary to go quite a distance. If a yard is fifteen miles away, a horse-drawn vehicle is too slow, wasting too much valuable time. If a man is capable of handling and operating four or five yards successfully, the more actual work among the bees he can do himself, the less he has to hire. If he has to spend half his time on the road he loses practically half of his capacity to make the yards earn him his revenue.—ED.]

MEDIUM-PRICED AUTOMOBILES.

Steam vs. Gasoline Machines.

BY JOHN P. TULL.

Noticing the few remarks in GLEANINGS about automobiles, will you kindly inform me if you have any knowledge of the Stanley steam car? Have you any in your city? Would you prefer steam or a gasoline car? I may order a car for about \$1000, to seat



HENRY STEWART'S BUICK, MODEL 10, WHICH HE USES FOR OUT-APIARY WORK.

four persons, and am undecided which kind to buy. I feel inclined toward the Stanley steamer, owing to its easy riding, on account of my wife's health. She underwent an operation about a year ago, and is very tender in the side. Any information you can give me in reference to this car will be fully appreciated.

Philadelphia, Pa., April 21.

[There are only two steam automobiles on the market that we would recommend—the White and the Stanley. Both of them are said to be somewhat expensive to maintain. Both use, for the same mileage, from one-third to one-half more gasoline than the regular internal explosion, or what is generally called a gasoline-engine. They are not as satisfactory for winter use; they are much more complicated, have a lot of little dinky pumps, and small pipes that are liable to give trouble. If one can afford a chauffeur, and stand the larger cost for maintenance and repairs, the machine is all right. It is easier to drive than the gasoline-car, is more flexible, is slightly quieter than some gasoline-cars, and can be driven at a slower pace through crowded sections of a city. On the other hand, the gasoline-car has been so far perfected that there are

several machines that can be driven fully as slowly as the steam, and the cost of maintenance is much less than that of the other type.

If you want a nice little gasoline-car for about \$1100, that your wife can drive, that is very quiet in operation, quieter than most steam machines, that can be driven at any speed from one mile up to thirty, we would recommend the Cartercar friction drive. It has a very simple transmission, and is about the quietest gasoline-car of which we have knowledge. We have one of them in our family, which runs so quietly that one would think it was an electric. It seats four people, and has a nominal rating of 22 or 25 horse power. The Overland, at \$1000, will carry four passengers. It is a faster machine, and is exceedingly well designed. If you are willing to pay a little more money you will find the Reo \$1250 four-cylinder one of the best machines on the market, built in a large factory, and is first-class in every respect. This will carry five passengers; has ample power, and is backed by a company that has been making good for years. We have driven Reos for the last four years, and have three of them in our family. One double-cylinder car we drove thousands of miles with a maintenance expense of only \$50.00 a year for repairs and tires. Talk with any garage man and he will tell you this is remarkable, and yet the two-cylinder Reo cars have been doing that. You can buy these two-cylinder five-passenger cars for \$1000. They are very simple, and cost of maintenance and repairs would probably be less than any other car you could buy; but it is not as well adapted for city streets, for slow driving, as the Cartercar. The four-cylinder motor makes a more flexible power, and that is the reason why the Cartercar, especially with its form of transmission, would be better suited for your purpose.

The Ford four-cylinder and the Buick four-cylinder are also fine machines. The former can be bought for \$850, and is a five-passenger car. The latter costs about \$1000. If you have a top to either it will add about \$75.00 more to the expense.

We have absolutely no interest in any one of these cars; do not carry any agency, nor do we have any advertising from any of these makes. The writer has made a special study of automobile construction. Owing to the fact that many of our subscribers have been asking for in-



BASKET USED IN SECURING SWARMS CLUSTERED IN THE TOP OF TALL TREES.



THE BEES DUMPED ON A SHEET BEFORE THE HIVE.

formation we have felt it our duty to tell of our experience.

If you were in the country, and wanted to go over very rough or muddy roads we would recommend one of the high-wheeled type of machines made by the International Harvester Company, of Akron, Ohio, or by the Auto Bug Co., Norwalk, Ohio. These are good machines; but they are ungainly-looking. They are not in keeping with the general styles of automobiles with pneumatic tires. For pleasure-driving, the pneumatic-tired low-wheeled machines are much to be preferred.—ED.]

SECURING SWARMS IN TALL TREES.

BY FRANK C. PELLETT.

Quite frequently the question is asked, "How shall I capture swarms that cluster in tall trees?" The editor always gives the excellent advice to place the apiary where there are no convenient clustering-places beyond easy reach. Perhaps, however, there are others situated as I am, with no such place available, and so I will try to make clear my methods of capturing swarms that have clustered high up above the reach of the longest ladder. Every year there are several such swarms to be considered, and

in some cases they cluster from forty to fifty feet above the ground. After three successive years of tree-climbing, however, let me say that we are preparing to follow the editor's advice to get the bees out of easy reach of tall trees as soon as possible. None of the methods described from time to time have been of any use to me, as my trees are very tall native oaks and elms, walnuts, etc., with few limbs less than twenty feet from the ground.

A painter's extension ladder enables one to reach the limbs, and for the rest of the distance it is simply climb. The accompanying picture shows the basket which we use for bringing the bees to the ground, a large one holding a bushel and a half, with ropes tied across to form a convenient handle. With this basket it is not a difficult matter to get most of the swarms. Simply climb the tree and shake them into it and bring them down. When perchance a swarm clusters so far out on the limbs that we can not use the basket, a sack is substituted. The other picture shows a large swarm that clustered in the extreme top of a large elm. The bees may be seen leaving the sack and entering the hive. This was the most difficult feat of three years' experience, and about cured us of the tree-climbing habit.



ACKERMAN'S APIARY, SHOWING VENTILATING-BLOCKS UNDER THE BROOD-CHAMBER.

Although we have had some bad ones we have never yet failed to get the swarm, no matter how difficult their location, although it is no simple matter to get the sack over a large cluster on the end of a limb forty feet above ground.

Atlantic, Iowa.

[You don't say any thing about clipping your queens' wings. If you practiced clipping all your queens in the first place, there should be little or no climbing of these tall trees. All you would have to do would be to wait for the swarms to return to their respective queens, when the rest would be easy.—Ed.]

INCREASED BOTTOM VENTILATION TO STOP SWARMING.

The Plan of Raising the Hives from Bottom-boards Practiced Four Years with Good Results.

BY WALTER ACKERMAN.

When the weather gets hot, and bees hang out around the entrances, I put blocks under the hives toward evening, varying the thickness of the blocks according to the strength of the colonies. For instance, if the bees hang out just a little I use $\frac{1}{4}$ -inch blocks; in other cases I use $\frac{3}{8}$ -inch; and for colonies that are very strong, $1\frac{1}{2}$ -inch. By the next day the bees begin to act differently; and so far as preventing swarming is concerned, if this work is done not less than a week before there are signs of swarming, it can be stopped. One needs to be careful,

however, and not let robbing get started. Even though my hives are pretty well shaded I have been providing this extra ventilation for about four years, and I would not think of doing any other way.

In regard to comb-building between the combs and bottom-board, my experience is like that of Mr. J. A. Yeomans, as given on page 638, October 15. I have never had such trouble. The bees use either side of the hive or the ends for entrances.

The illustration shows my yard as it was two years ago. Some of the hives are raised from the bottom-board. The one marked with a cross had four two-inch blocks under it, besides the extra ventilation afforded by reason of the super being moved back. Some of the other hives had $\frac{3}{8}$ -inch blocks, while still others, being nuclei, were kept closed on account of danger of robbers. I had shade-boards over the hives, but removed them when the picture was taken.

It is very windy here at times, and I need plenty of weight on the covers to keep them from blowing off.

Portsmouth, Ohio.

[Several have already reported favorably on this kind of bottom ventilation to keep down swarming. The trick is so simple, and so easily applied, that we hope many will try it and report. Don't forget that the remedy must be applied *before* the bees make preparations for swarming. In the meantime, there are doubtless others who have tried this ventilation plan for checking swarming. If so, we hope they will report their experience.—Ed.]

SWARMING.

Some of the Causes that Induce it; Can the Swarming Instinct be Bred out? an Elementary Discussion that will Prove Helpful to Beginners.

BY GEO. W. WILLIAMS.

It is generally understood that swarming, or, rather, the interruption of work, before and after the swarming act, costs a large per cent of the honey we could otherwise secure. It is true that we can, by more or less complex systems of management, partially overcome this loss; but we pay the price in added work, and in worry and uncertainty. What a boon it would be if we could eliminate this troublesome tendency! But can we do it? The logical way would seem to be by selection and judicious breeding, both of which are advocated by some of our best writers. But if we are to succeed we must fully analyze the difficulties that must be overcome.

We must always keep before us the fundamental truth that bees are not reasoning beings to any appreciable extent, but are governed entirely by instinct. We must also remember that, while instinct is knowledge, it is *inherited* knowledge, and it is as unchangeable as the laws of the Medes and the Persians. Hence, under similar conditions the actions and conduct of bees will always be the same, regardless of location. Allow me to emphasize this thought, and put it in the form of an unvarying principle: *Under similar conditions, any given stimulus will at any time produce the same results.*

Another fact we must consider is that bees, being governed entirely by instinct, can have no initiative of their own, but must of necessity be stimulated to any action whatever by outside influences.

Now it follows, that, as bees are governed by instinct, and instinct is stimulated to action by outside influences, if we are to change results from what we have at present, we must change either the instinct of the bee or the surrounding influences. Either one will secure results.

We know that bees will not swarm at all under certain conditions. Given room, a cool and uniform temperature, and freedom from the excitement of other bees swarming, they will not swarm. Inversely, contract and crowd the abode, raise the temperature, and place them among swarming colonies, any bees will swarm. Unfortunately, the conditions that stimulate them to do their best work in storing also stimulates the swarming instinct. This limits the field for improvement in this direction to a choice among the half-dozen systems of more or less successful control by manipulation.

After a trial of any or all of these systems our minds invariably turn toward the other and very desirable thing of changing the instinct of bees so that they will not desire to swarm, no matter how we crowd them nor

how rapid a pace we induce them to maintain.

Upon a careful analysis, this seems less hopeful than the other scheme, unless we could control mating as we control it in our other live stock; for any tendency to improvement in this direction is leveled down by the crushing mass of adverse influences.

When we can successfully control the mating, we can hope for practical results along this line, and not before; for instinct, as I stated before, is simply inherited knowledge handed down from generation to generation from some remote ancestor who somehow acquired it, and it is as real and tangible a portion of the nervous system as the legs or wings are of the body. Hence the young bee does not have to *learn* to gather honey nor to build comb, but the knowledge comes to it ready made along with the knowledge of walking or flying. So it seems that, if we are to change the actions of the bees and not change the conditions surrounding them, we must really change their physical structure. We all know what a gigantic undertaking it is to change the length of our bees' tongues, even with millions of tubes of red clover tempting them every day in June, calling on nature to add just one tiny bit to the tips of their tongues so as to sip the precious nectar almost, but not quite, in reach.

How, then, can we hope for any great results in changing a tendency that was implanted ages before Samson found the swarm in his lion's dried carcass, and has ever since been fostered and encouraged by systems of "taking up" the heavy new swarms and keeping the swarm.

If we are to change the physical structure we must do so by subjecting the bees to a sustained condition that does not excite the swarming tendency, long enough so that this portion of the nervous system shall become eliminated by disuse. How long this may be I do not know. I knew two instances where colonies had remained 25 years without swarming, and, when placed in ordinary conditions, they swarmed as freely as if they had never had a vacation. I imagine that, if we were to put a colony into a case isolated from other bees, and leave them a couple of thousand years or so without swarming, and then restore them to ordinary conditions, they would not swarm more than once in two or three years any way; but I should not expect much better results.

There is one thing that offers some slight hope for improvement; and that is, the tendency of some offspring to vary slightly from the parent stock. But in bees and ants the effect of their habits of mating has been to equalize and fix the racial instincts so firmly in their physical structure that sports are rare indeed; but they do occur, and by a combined effort in selecting the non-swarming queens to breed from we may improve in this respect; but it will be a slow process, and in the meantime we comb-honey producers must use the best system we

can find to overcome the tendency. At any rate, these troubles of swarming, foul-brood, etc., are not without their benefits. I can control foul brood, and I can, by a proper system, direct the energies of the bees into the proper channels, and, by my system of shaking, keep their energy keyed up to the proper pitch while the flow lasts; and while I can do these things at a profit, others who possibly could do them, but do not take the trouble to learn how, do not do them, and fail. Otherwise they might be troublesome competitors.

By the way, did it ever occur to you that, if the swarming impulse were eliminated, the building of drone comb would also be eliminated? The thought has occurred to me that, if we could establish and maintain the conditions favorable for building worker comb only (always excepting the time of superseding), the swarming question would be solved.

I have been able to establish, but not to maintain, this condition indefinitely. Now, Dr. Miller, can you not suggest some plan to do so, and thereby place the coping to the splendid monument you have erected to guide the feet of the laity?

Redkey, Ind.

THE UNDERLYING PRINCIPLE OF SHAKING.

Interchange of the Division of a Sectional Hive
the More Scientific Treatment.

BY LEO E. GATELY.

Successful honey-producers have reported beneficial results from shaking to increase the energy of bees; and, from the nature of things, others have expressed a strong belief in its efficiency. I wish merely to draw attention to the mistake made in supposing the operation in itself to be in some mysterious way a stimulus, while all such benefits clearly emanate from a change of conditions connected with the manipulation. Let us lay aside tradition and preconceived notions, examining this subject with a desire to know the truth.

The error in concluding that benefit is derived purely through the act of dislodging bees from their combs into a pile before the hive is apparent when the claim is set forth that the disturbance will bring old colonies into some psychological condition which characterizes swarms. If newly hived swarms display an unusual degree of activity, it has been conclusively shown that such energy is not a result of the swarm having issued from the hive, nor its handling in being captured, but entirely from new environments. How frequently is an incidence taken for a cause! and how severely are the poor bees often made to suffer through ignorance and lack of careful investigation! It is the broodless condition of newly hived swarms, and not mental conditions, that is alone attributable to an increased activity.



DAMAGED SHIPPING-CASES.
See Bee-keeping in the Southwest.

Colonies that refuse, during a good flow, to do super work while others may be busy in the sections, will, if investigation be made, generally be found laboring under adverse conditions. They can usually be induced to do so by providing more favorable conditions under which naturally they are inclined to do such work—never through dumping them out upon the grass. Some colonies are naturally inclined to ignore supers because of inferior blood; but more frequently it is the result of extenuating circumstances and surrounding influences.

Shaking will occasionally remove undesirable conditions through breaking into and disarranging the natural order of things; but the benefits are accidental, and he who would be master of the situation must rather locate and remedy evils. Certain it is that the mere act of dumping bees before their entrance, and letting them creep back to their work, is of absolutely no value except when connected with a change of environment. To anticipate beneficial results from indiscriminate shaking would be extremely illogical and inconsistent, as it is simply preventing the colonies from working. On the other hand, intelligent manipulation is imperative and indispensable to profitable honey-production.

By the transposition of brood-sections, users of divisible hives can accomplish in a few minutes, and with a minimum of labor, the object sought by "shakers." To create increased activity positively it is then only

necessary to interchange the two divisions of the brood-chamber, causing the bees to move honey. This scientific operation, practiced at the time of giving surplus receptacles, will compel the bees to begin super work immediately.

In shaking, as in our other operations, let us apply knowledge and scientific principles instead of viewing it in the light of some intangible and mysterious force or freak of nature.

Sebastian Co., Ark.

[We doubt if all of our readers will agree with our correspondent in saying that the extra energy of a new swarm is due to a change of external conditions rather than to any psychological effect. Possibly he is right. In any event, the subject will merit some discussion.—ED.]

RHEUMATISM AND BEE-STINGS.

An Interesting and Instructive Article.

BY A MICHIGAN COUNTRY DOCTOR.

I have been instructed, amused, and depressed as my mind has been played upon by the various references I have seen in professional, miscellaneous, news, and special journals upon bee-sting poison and rheumatism. I have experienced these different mental modalities as sense, nonsense, and ignorance are exposed by the various writers. I note in GLEANINGS occasional discussions of this subject. I am not an expert in the ways of bees nor in the production of honey. I am only a country doctor who studies, among other subjects of routine, "rheumatism." Any one who is looking for a cure for rheumatism is searching for what he will never find. One who is looking for a relief for *his own* rheumatism may find it.

The old-fashioned notion that there is a cure for a disease—i. e., that a disease, separate and apart from its peculiar manifestations in the person who has it, has a medicine that will operate curatively, is no longer held by any one who has a comprehension of the nature of diseases and the action of remedies. Diseases manifest themselves differently in different people. In one, so-called rheumatism manifests itself in one way; in another person its manifestations are as different as if due to another cause. Some have the pain located in the back, others in the trunk, some in the small joints, others in the large ones. In some the pains are muscular; in others they appear to be in the tendons and sheaths of muscles. In some it hurts all the time; in others pain is periodical, or aggravated by particular conditions. Some have fever with rheumatism, and are sick abed. Some have heart-valves and heart muscle involved. Some can not move; others are so restless they can not keep still. Now, to relieve the particular manifestations of the rheumatic affection a remedy must be selected that corresponds to the individual's case.

Every person has his own individual rheumatism. Be the aggravation in his heart, general muscular system, tendons, sheaths of muscles, joints, or where it may be, it is affecting him differently, and he is a different "rheumatic," just as he may be a child, a grown-up person, one with good habits, is afflicted with other taints, is rugged or weak, plethoric or anemic, exposed or well housed, confined to bed, or impelled to move about for relief, etc.

Physicians no longer prescribe medicines for diseases. They prescribe for the sufferer who has the disease, and dispense the remedy as indicated by the signs and manifestations in his particular case.

The actual cause of rheumatism is not known; but it is known not to be uric acid. Uric acid may be the cause of gout, but not of rheumatism. The opinion generally prevails among scientific physicians that rheumatism is a germ disease, although the exciting microbe or microbes have not been satisfactorily identified (see *Med. Record*, Dec. 11, 1909, p. 976). Some rheumatics are relieved by salicylic acid, some by colchicum, some by aconite, some by one remedy, some by another. There is no specific for it. Consequently, if bee-poison will relieve a form of expression that rheumatism may take, it is foolish to expect it to relieve all, any more than salicylate of soda will relieve all.

There is a type of rheumatism, or rheumatic-like ache and pain, that will be relieved by *apium virum*—the poison of bee-stings. The kind of joint and muscle aches and pains that will react to the bee-poison is that accompanied by local dropsical swellings about the parts affected. The skin around the sore spot is waxy and pale in appearance. The urine is usually scanty. The pulse is quick, hard, and small in severe cases.

Many cases of heart involvement with fluid in the "heart-sack" yield to it. The synovial (or joint) membranes are particularly frequent seats of the swelling that will respond to this treatment.

The cases of rheumatic-like states that will be relieved by the bee-poison are not the most common kind by any means. That is the reason that all who are afflicted with the ailment are not relieved by the treatment. Those cases that have been reported as cured or ameliorated have been the ones to which the poison is remedial; those that have not reacted needed some other kind of remedy, which may or may not have been one of a dozen.

The virus of honey-bees is a commodity in the drug market, and is to be had from pharmacists for dispensing. It has its indications in the therapeutic field, and is in the armamentarium of hundreds of physicians. Those who know how to use it, and who understand its clinical indications, rely upon it with as much confidence as is to be reposed in any drug. I believe that there are dealers in and producers of bee products who can tell something about "orders"

from pharmacists for the "raw" material from which the remedy is produced.

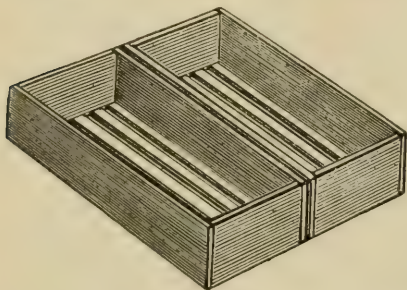
[While our correspondent modestly signs himself "A Country Doctor," one of our staff happens to know something of him. Dr. — is connected with a great institution where his opportunity for observation and treatment of rheumatism is much greater than most doctors have. We know, too, that he had under his care one of the most severe cases of rheumatic affection that is often seen, and this case came from a bee-keeper's family. We can only add that our confidence in his judgment, as shown in the case mentioned, is unbounded, and we know his article is inspired by a desire to be helpful, and to set our readers right on this matter.—ED.]

PRODUCING COMB HONEY WITHOUT SEPARATORS.

How the Super Should be Arranged; Full Sheets of Foundation in Split Sections.

BY SAMUEL SIMMINS.

Mr. W. Z. Hutchinson and other practical producers claim that they have produced good straight section combs of high quality without using separators, and they are fully justified in making the assertion. Nevertheless, when manufacturers start to offer supers for sections set up without separators they find very little demand for such wares. It may be that the members of our fraternity have not been educated to the use of sections without separators, though I fear many will never take the necessary trouble, slight as



it is, to keep their hives level. That point is, of course, important, more especially where full sheets of foundation are not used and they are not fastened to both sides of the section.

Some thirty years ago I was making strenuous efforts to induce comb-honey producers to make a trial without using separators. I also showed how one might meet the problem half way, as it were, by adopting twin supers with only four sections across (Fig. 17, 1904 edition, "Modern Bee Farm"), or triplets with three sections across. In any of these there are no loose pieces about, and no large number of sections without a separator.

The narrow or vertically divided form of super allows of rapid completion, and permits of further manipulation to that end. It is well known that the end-row sections are often thinner, and frequently delayed in completion; but the twin crates allow of these outer ends being presently turned to the center, and the center to the outside. They are then worked out as perfectly as any. The triplets first illustrated in my 1886 pamphlet allow of similar manipulation, while the central crate is quickly ready for removal.

Perhaps even a greater advantage with these twins and triplets is that of having fixed slatted bottoms. They can thus be placed close on top-bars of the frames below; but note this—always *crosswise* of the frames. Thus the bees have a number of square openings, admitting them to the supers, and those spaces are never filled up with bits of comb, for the simple reason that no place is left for brace-combs between the frames and the first super. Neither is there any space between the additional sets of supers that may be given later—a condition in ordinary supers which sometimes checks the bees, resulting in the upper tiers being badly finished or entirely neglected. Though placed crosswise on the brood-frames, all sets of supers are placed the same way.

You need crush no bees in placing the supers in position, because they are in twins or triplets; and for the same reason the glueing-down causes little inconvenience compared with the manifold advantages derived from the twin or triplet system without separators. A full-size crate with slats close on the frames below would, of course, be somewhat difficult of removal; but the sectional formation on vertical lines is quite a different thing, as a practical worker soon finds.

The slats should not be more than $\frac{1}{4}$ -inch thick; a $\frac{3}{8}$ -inch bar is clumsy, and serves to place the sections that much further from the bees below—a detriment, as will be admitted, when first getting the bees to start super work. Many section-frame holders have the bottom-bar $\frac{3}{8}$ inch thick, and these, again, spaced $\frac{3}{8}$ inch away from the frames—a most serious impediment, more especially when the apiarist also interposes a queen-excluder.

One reason why the $\frac{3}{8}$ -inch bar is used under sections is probably because the producer often insists upon working four sections in a frame instead of three, and, unfortunately, the manufacturer appears to encourage this false practice. By spreading sections over too wide a superficial area the combs are not completed so quickly, neither are they finished all around against the wood as perfectly as when fewer are used within the confines of the warmth ascending from the colony. The fact is, a tier of three crates, each holding 21 sections, will be finished off more quickly, and in better condition, than two crates of 24 or 28 sections each.

This point in favor of the smaller number of sections to the crate is intensified when the additional outer margins of space are

given up to packing rather than to a surplus of exposed sections a much smaller number of combs being found in an unfinished state at the close of the season. As an example, a moderately strong stock was supered with a crate of only 16 sections; and within a few days the number was made up to three in one tier. Two were so quickly completed that they were removed and replaced by two others, making five in all (of sixteen each) during a poor honey season, and in little more than three weeks the whole 80 were completed in perfect condition. Colonies in other hives, supered with crates containing 24 sections, and having exposed sides, did not finish off half the number. The small crates of 16 each were within an outer case, and the work was so rapid that the queen had all the stock combs to herself. No excluder was used; and, even if so inclined, she had no chance to start laying where the workers were storing all the honey they brought in. The crates had slatted bottoms resting close on the frame-bars, and each crate close on that below.

If the bees are induced to start off more quickly in the smaller well-protected crate it stands to reason the queen is less likely to be crowded out of her legitimate domain, and the hive has a larger population all the time, while excluders are superfluous.

The twins or triplets with slatted bars may be set on with a sliding motion, starting from the ends of the frames; or any one used to bees can place them after smoking, by a gentle swaying motion that will cause any stray bee to run down.

As illustrated in the 1886 pamphlet issued by me, the outer sections are set against $\frac{1}{8}$ -inch slips tacked to the sides of the cases, thus equalizing the thickness of the combs. I have never found it necessary to use less than $1\frac{1}{4}$ -inch sections without separators, and have had no uneven or bad-shaped combs built at that gauge. I have, however, always used full sheets of foundation; i. e., fixed to top and two sides, but $\frac{1}{4}$ inch clear of the bottom, and I am unable to agree with the editor that foundation showing through the saw-cut is likely to give comb honey a bad name. Full sheets waxed to the top and sides certainly give combs that can be shipped more safely than those combs built from starters only; but the waxing around the sides will surely be objected to as much as the foundation showing through without that rim of wax inside, and which shows up only too well when the comb is cut out. If the waxing is strong, the foundation held in the saw-cut is certainly far stronger for shipping to distant markets.

If it were not for the above question of marketing, and for securing the largest possible quantity of beautiful-looking combs with even worker-finished cappings, one might well agree that there is no comb honey to equal that started from the smallest possible guide of wax, so far as the eating of it is concerned.

A diminished output, however, and a large percentage of broken combs, will not

bring much profit to the producer, nor will the salesman be at all eager to repeat his order for goods that do not arrive in a presentable or marketable condition. Hence while studying the consumer as far as possible the producer can not afford to discard the most expeditious methods of preparing his sections; and I believe there is no quicker way than that of inserting the foundation into sections cut through on three sides—i. e., top and two sides; and, still further, by having the foundation long enough to slip into three or four sections in the same row at one operation—a plan I have adopted for some 18 years; besides sending out large numbers so prepared during that period, without one single intimation that there was any idea of artificial comb honey.

About fourteen years ago I sent GLEANINGS a sample frame of three sections, cut through on three sides, with the full sheet of foundation across the three; but the editor did not seem to catch on to the idea that there was a great saving of time over waxing, and no possibility of any ill-shaped combs caused by foundation falling through the weight and heat of the bees.

I have found little advantage is using high side walls to super foundation, as the bees almost invariably scrape off the raised portions and start anew. I have also reason to believe it is not unusual for them at the same time to alter somewhat the bases of the cells. We hear very little of the VanDeusen flat-bottomed foundation now, but I am of the opinion that *that* kind is least noticeable in the finished product. The very thin base, when altered by the bees, being little if any thicker than the natural comb, is a point that brings us nearer to pleasing the palate of the consumer.

Heathfield, Eng., Dec. 4

A VISIT TO A CALIFORNIA APIARY.

Prospects for the Season.

BY MRS. H. G. ACKLIN.

The writer took a run a few days ago out to the apiary of D. J. Shultis, secretary of the Los Angeles County Bee-keepers' Club. This apiary, of about 325 colonies, is located a short distance from the Monrovia car line and Santa Anita road. The path to the house leads through an orange-grove, and on the morning of my visit the bees were literally swarming on those full-blooming trees.

On reaching the house a young girl directed me to the apiary, which is a short distance to the north, kindly telling me to call to Mr. Shultis before reaching there, and he would come out; otherwise I might get stung. I walked right in, but did not turn around and walk right out again, as the bees were too busy with orange-blossoms to pay any attention to me.

Mr. and Mrs. Shultis were both ^{as} busy as they could be, trying to give the bees room by extracting a few combs from each

super. Two or three hot days had brought the blossoms forward so quickly that they were not prepared for the rush of honey; and the way that orange-blossom nectar was sailing in was a caution.

I was soon ready to pump the smoker for Mr. Shultis while he brushed the bees from the combs. Some of those combs must have contained eight or ten pounds of honey, they were so fat; but I believe some California bee-keepers like fat combs. At any rate, this particular one gave his bees a chance to build them that way, having one or two combs less than the regulation number in each super. The capping on this honey was fully as white as on the white-clover or basswood honey in the East.

The compactness of this apiary was a surprise. There were 325 hives, all facing one way, if I remember rightly, in a comparatively small space—just room enough between the rows, north and south, to run a narrow wheelbarrow. It seems almost any thing can be done with bees when nectar is plentiful; but I wonder if they will be as amiable all this hot summer after the orange bloom is gone.

Mr. Shultis expects to get four tons or more of orange-blossom honey this spring; and as this will be practically the first new honey on the market, it will command a fancy price. The honey-tanks stand out in the sunshine, and are filled by means of a pipe running from the honey-house, several feet distant. They are also near a wagon-road. Room to place a five-gallon can is made in the ground under each faucet, so filling the honey into cans and loading it will be comparatively easy.

In conversing with a gentleman from Canada the other day, who has been in the southern part of the State the past year engaged in the bee business, an interesting subject was touched upon. He claims that wintering is more of a problem here than in his old home. His argument is that the queen lays no eggs during the cool rainy months; but the workers are out, except when it is raining, after forage, which really amounts to but very little, thereby wearing themselves out and reducing the strength of the colony, with no brood coming along to take their places. The consequence is that, when fruit bloom comes on, most colonies are too weak to send out a large force of workers, and so the harvest is lost. On the other hand, bees wintered in a cold climate have been resting for several months, and start out in the spring with a large force of energetic workers. Of course, we all understand that the deciduous fruit bloom comes on much earlier here than in the North and East. How is this, Mr. California Beekeeper?

The late rains have set things a-hummin' in beedom. Bees are being moved to wild-buckwheat fields that would have remained on their winter stands only for the rain. Nevertheless a large honey crop is not expected in Southern California, especially where the sages are the principal forage plants.

Wild mustard grows almost everywhere in great profusion in this locality, and is now in full bloom. Probably it is always in full bloom. I never remember seeing it otherwise. Why do we not hear of wild-mustard honey? If all the waste places were covered with sweet clover instead of mustard, what a jollification the bees would have; and, incidentally, their keepers also!

Mr. C. H. Clayton, of Los Angeles, is experimenting with an uncapping-device which, if it proves a success, will be a great labor and time saver to bee-keepers, and especially so to the apiarist who has hundreds of colonies. I can just imagine the outfit working which I saw standing still the other day. A gasoline-engine was hitched up to our eight-frame extractor, with this device firmly attached to the top of the extractor. The most arduous labor of the beekeeper with that outfit will be to pocket the money from the proceeds of the season's crop.

The next meeting of the Los Angeles County Bee-keepers' Club will occur on Saturday, June 4, in the committee room, third floor, Chamber of Commerce. This club did enough during the first week of its existence to justify its organization. The committee named to confer with the County Supervisors in regard to shipping restrictions got right after its work; and the consequence was that an ordinance was passed prohibiting the shipping of any bees, which were located within twenty-five miles of a district infected with black brood, into this county.

Plenty of Honey from the Cow Pea.

Mr. Dillard, April 1, page 235, asks if bees gather honey from field peas. My observation for years has been that the field pea that he refers to, which is the cow pea, not the pea of the North, does produce nectar or some sweet around the joints where blossoms join the upright stems. This is where the bees, and particularly the common red wasps, love to feed. I do not know that the honey-bee can reach the honey in the blossoms. Whatever substance exudes from the point mentioned is not confined to the blooming time alone, but is present, more or less, later, the joints taking on bright or dark red color. My reason for stating that the pea to which Mr. D. has reference is the cow pea is that this is the Southern pea, and should be in bloom late. The Canada field pea, if grown in Georgia, would be ripe and dry by harvest.

Phoenix, Ariz., April 7.

E. T. HUNT.

Plaster-of-Paris Method of Killing Rats Very Satisfactory.

I wish to indorse Mr. Hacking's method of exterminating rats, p. 128. I have used it for years, and consider it the most humane, effective, and safe way of ridding the premises of rats. They are hard to catch in traps, and cats as well as fowls are liable to be caught. I would not put out poison for any consideration. I take the precaution to turn a box over the pan of mixture, with the corners blocked up so nothing larger than a rat can go under. This keeps poultry and birds from it.

I do not think it is necessary to put out a dish of water if there is any water to be had within half a mile, for they will immediately go in search of it; and if they have to go a few rods it takes them away so they do not die about the buildings.

If a cat or dog should happen to eat a carcass there would be no bad effect as would be the case if the rat had been poisoned.

Mansfield, Pa., March 14.

A. D. WATSON.

Heads of Grain

from Different Fields

Disinfecting Hives and Frames; Honey Vinegar.

1. Is not boiling water sufficient to disinfect foul-brood hives and frames?

2. Can a super of dry combs that has been on a foul-brood hive be used with safety?

3. Last spring I had a few colonies that showed foul brood; but after they swarmed and the new queen had commenced laying it disappeared. When a new swarm is placed on full combs, why would they not work as well in two supers or hive-bodies, with full foundation, as one?

4. How can I make honey vinegar? I put several gallons of honey-sweetened water in a crock last fall, and it is now just as sweet as ever. I have a good deal of very dark honey which is not readily salable, and I should like to make it into vinegar.

5. Is there any way to restore soured honey?

Finwick, Mich.

C. W. SANDERS.

[I. It is doubtful if boiling water splashed into the hives would be sufficient; but frames should be boiled at least twenty minutes, and we would recommend one or two hours to make sure. We should much prefer to disinfect the hives by means of a flame from a gasoline-torch or burning a little straw inside of the hive, so that every portion of the inside of the hive and the entrance and alighting-board will be blackened but not charred.

2. Yes and no. In the great majority of cases, empty combs from a super above a foul-broody colony will not carry disease; and as there is always danger, we would advise putting such combs in some particular hive and keeping watch of them there. If you wish to be on the safe side, melt the combs up and substitute clean frames with foundation. If the rendering be done properly the price secured from the wax will buy new foundation.

3. A swarm can just as well be placed in two supers or hive-bodies of combs as in one—no advantage in using two unless the colony is very strong.

4. Your honey water was probably too sweet. The late E. France, who used to make considerable quantities of honey vinegar, determined the degree of sweetness by putting in the mixture of honey and water a fresh egg. If the egg would float so as to leave just a spot above the liquid about as large as a ten-cent piece he pronounced it about right. Mr. G. D. Black uses an ordinary hydrometer. This should sink, he says, into the liquid so that the scale will register at 11. It is important to place the sweetened water in a warm place in an open vessel covered with cheese-cloth to keep out insects. The process of making vinegar can be greatly hastened by using "mother" from an old vinegar-barrel.

5. Nothing can be done with sour honey except to convert it into vinegar.—ED.]

Making Increase and Changing from Eight-frame to Danzenbaker Hives.

Last year I had one colony of bees, and managed to increase it to four colonies without any trouble, and they are doing finely. They are in eight-frame dovetailed hive. I have now bought twelve Danzenbaker hives with supers and full-sheet foundation. What is the best way to make increase from eight-frame hives to Danzenbaker hives, without swarming? In your booklet, "Facts About Bees," on p. 56, you speak about the queen occupying the cells. How did the queen get there? Was it accidental or was she shaken off into the grass with the bees? On p. 74, Dec. 15, Mr. Barron tells me how to increase on the shake-out plan. Where does he shake the bees? and what does he do with the brood? I wish very much he had told more about it in his communication.

Tilton, N. H., Dec. 25.

F. M. CLARK.

[When we speak about the queen "occupying the cells," p. 56 of "Facts about Bees," we mean *laying* in those cells. You have the impression, somehow, that she went inside of a queen-cell. That is not what we meant. Referring to the item on page 74, Dec. 15, Mr. Barron meant the usual procedure—that is, shaking the bees in front of the entrance.

The brood can be left in the parent hive, for not all of the bees will be shaken out of it. For further particulars on shook swarming see "Facts About Bees," also our A B C of Bee Culture, under the head of "Swarming."—ED.]

Would Another Swarm Issue Within 30 Days?

When the first swarm comes out, if the old hive with what bees are left, together with all the frames of brood and queen-cells, are moved to a new stand, can two of the frames of brood containing one queen-cell be placed in a hive on top of the old hive, having a queen-excluder between? There would thus be one queen-cell in the top hive, and one in the lower hive with queen-excluder between them. Of course, there would have to be a small opening in the top hive till the young queen has taken her bridal flight. As soon as the young queen has commenced to lay, the top hive could be filled out with frames of foundation. Would such an arrangement cause the lower hive to cast another swarm before thirty days? If one of the young queens failed to return from her flight, the other would most likely land safely.

Colorado.

A. B. CLEMENT.

[There will be no danger of a second swarm if all the cells but one are cut out in the lower hive. As to whether the colony will raise a queen in the second story when they have a perforated zinc, a good deal will depend on circumstances. The bees might and might not allow the virgin in the upper story to remain. A good deal depends on the strain and the time of the year.—ED.]

The Danger of Sugar Syrup Going into the Supers.

A year ago last fall I fed 26 hives of bees (after I took the supers off) 200 lbs. of sugar, and the following spring I fed those same hives, before I put the supers back on them, 125 lbs. more of sugar, and at the time I put the supers on I had the brood-chambers full of bees and brood and sugar syrup. I believe the bees carried a good portion of that syrup up into the supers. Did I lay myself liable to prosecution for violation of the pure-food law? I sold my money to the public.

Gardener, Va., Jan. 29.

H. HURT.

[It is hardly likely that the bees would carry into the supers the syrup that you fed. The presumption is that it was all capped over before the honey-flow came on. A good portion of it will be used in brood-rearing. We see no reason, therefore, why you could not honestly sell your honey as pure honey. We would, however, avoid feeding just before the honey-flow, for then there would be quite a possibility that some of the uncapped syrup might be carried into the supers.—ED.]

Bee-keeping in a Garret Very Simple.

I read, on page 113, Feb. 15, about a colony of bees kept in a garret for eleven years, and that never swarmed. Now, I should like to know if Mr. Stewart ever changes the frames in the brood-nest—that is, took out the old combs and put in new ones, and also if he requeened, and how often, or did he leave it to the bees to supersede her?

Vowinckel, Pa., April 4.

D. P. TOOMEY.

[Mr. Stewart replies as follows:]

In answering the questions submitted I will mention some other things that may be desirable information to some persons desiring to make a start with a colony of bees in a garret.

The hive-stand should be on a level with the bottom of the window, and the window raised about an inch to afford the bees ingress and egress. The glass should be closely covered; and if there are other windows they should be shaded so that the bees see no light except that from the opening at the sill, which is an extension of their alighting-board.

When for any reason the hive is opened for manipulation it is well to open the window, when most of the bees that take wing will fly out. In the colony kept eleven years in a garret without swarming there was no change of frames or combs in the brood-nest, and it was but once requeened by the owner. The bees did the superseding, with the one exception, and in that instance the colony was queenless, and without eggs or larvæ—cause not known. In such a case the colony (without rescue) is doomed. Fortunately this does not often occur.

The main precaution, and practically the only

disturbance of the brood necessary, is twice a year to see that a queen is present (by her works), and that there are sufficient stores—namely, in the spring during fruit-bloom just before putting on supers; and, again, in autumn after the honey season, about Sept. 1, when taking off supers. If either or both are lacking, the only remedy is to re-queen, to feed, or to do both.

Toledo, O., April 7. **CHARLES STEWART.**
[We expect to have shortly an article on this subject from another who has had a wide experience with this garret method of keeping bees.—ED.]

Black Brood and the Sectional Hive.

I wish to thank you for your courteous reply to my criticism, p. 157, March 1, and also to call your attention to another editorial in your issue for June 1, 1909, in which you say, "If black brood should once get started in an apiary of ours we would treat the whole apiary, irrespective of whether individual colonies showed the disease or not." I regard this as sound doctrine, and we would certainly adopt this plan if foul brood of any kind were to break out in our apiary. From this point of view, by employing economic methods of treatment I can not see wherein the sectional hive would be a very bad proposition. Far be it from any desire of mine to cover up any of the weak points of the sectional hive, and it is easy to see that foul brood might get a pretty strong foothold in an apiary where the frames were seldom handled and the brood-chamber divisions interchanged freely.

It is my candid opinion that, if bee-keepers would keep only pure Italians, and see to it that they were liberally supplied with food at all times, there would be little trouble from foul brood or other diseases. The intermittent periods of semi-starvation to which bees are often subjected by careless bee-keepers saps the vital force of the bees and brood, and make them fall an easy prey to disease germs that are everywhere present. An ounce of prevention is worth a pound of cure, and judicious feeding is worth many pounds.

Birmingham, O. **J. E. HAND.**

How to Use Unwired Foundation so it Will Not Stretch.

Last spring I inquired as to the feasibility of making increase in an upper story by the Alexander plan of using full sheets of foundation without wiring. I tried it with quite a number of colonies, and it was perfectly successful in every case, the editor to the contrary notwithstanding. The bees occupied the upper story gradually, drawing out the foundation as the queen needed it, making nearly perfect combs—that is, they were perfect except for the space that was not filled above the bottom-bar.

The queen seems to find things exactly to her liking, and just spreads herself over the new combs. The only difficulty is, if the honey-flow comes on early the bees are apt to put a lot of honey in the way of the queen.

The only foundation that was at all stretched was the frame that I sometimes put in the lower story in place of the frame that I take out with the queen on it to put in the upper story. **E. L. BROWN.**

Warren, Minn., Dec. 15.

[While one can get fairly good combs drawn out from foundation that is not wired, yet the facts remain that an unwired comb can never be handled as readily and as rapidly, either in or out of the hive, or in an extractor, as one that has been securely stayed; and, what is of considerable importance, even if horizontally wired, foundation will have less elongated or stretched cells near the top-bar.

A great deal has been written on the best weight of foundation to use. The old-fashioned, or medium brood (which, of course, is more expensive by reason of its extra weight), will usually make better combs than the light brood.—ED.]

A Chicken that Ate Drones but Not Workers; a Remarkable Case.

One day last fall while working in my yard I noticed a chicken at the entrance of a hive, catching and eating bees. I watched him for some minutes. He would catch a bee going in or coming out, or jump up and catch one. I rectified a few lines on the demerits of a fowl that would eat a man's bees, and chased him out of the yard. Soon I caught him at

the same performances. I called my wife, and we decided to cut his head off, which we did. Upon examination of the chicken's crop we found it full of drones but not a single worker bee. After the observation I reproached myself severely for killing the goose that had laid for us the golden egg. But the unsolved problem with me is, how did the fowl know the difference between a bee that can sting and one that can not?

Hawthorne, Wis.

LEWIS EFAW.

No Inspector Provided for in Iowa.

I noticed with some amusement the remarks about the Iowa law appointing a bee-inspector. There was such a law passed, but no inspector was appointed. The legislature failed to provide funds to sustain the office, and probably no provision will ever be made. Any advice on the subject will be appreciated.

Anamosa, Ia., April 15.

FRANK SNYDER.

[This only emphasizes the great importance of having all foul-brood bills, before they are placed before State legislatures, carefully reviewed by an expert. Dr. E. F. Phillips, of the Bureau of Entomology, Washington, D. C., has made this a special study, and is willing to furnish copies of model bills.

In this case it is possible the Iowa legislature amended the bill, practically spoiling it. This has been done before.—ED.]

Will Bees Remove Honey-dew from Bait Sections?

In putting bait sections in supers from last year with honey-dew in them, and cutting the caps so the bees will remove it, will the bees put the honey-dew back in the sections again with new honey?

JOSEPH S. BOWMAN.

Harrisonburg, Va., April 16.

[The probabilities are that the bees would not remove the honey-dew from the bait sections unless the brood-nest were running short of stores. Any bait sections containing honey-dew should be consigned to the solar wax-extractor. It would be very risky to put them into a super, expecting the bees to remove it and put good honey in its stead. There is no probability that they would do it. When new honey came in they would store on top of it. Such sections would have to be sold for less price.—ED.]

Can Old Bees Raise a Queen?

When I find a queenless swarm with a laying worker I give it a comb of hatching brood, and in a few days I put in another comb with eggs and hatching larvæ or a ripe queen-cell. The young bees soon dispose of the laying workers, and they will raise a queen if they have eggs or hatching larvæ. From that I conclude that only bees under a certain age are capable of raising a queen, and that old bees can not raise a queen.

Hully, Colo., Dec. 24.

C. STIMSON.

[The plan you outline for disposing of fertile workers is standard and good; but you are wrong in supposing that only young bees can raise queens. The fact has been proven that old bees, when they have to, will assume the function of nurse bees or of raising a queen.—ED.]

Honey Secured from the Field Pea only when no Other Source is Available.

On page 235, April 1, a correspondent wishes to know if bees gather honey from common field peas. I have anywhere from five to twenty acres of them every year, and my bees always get a good deal of nice honey from them. I know this to be true, as the peas bloom when there is a honey dearth, generally, and so the bees gather honey from them. However, I notice that they do not work on it much if there is a better honey-plant blooming at the same time.

Raplan, Va., April 4.

G. H. LATHAM, JR.

Keeping the Bottoms of Hives and Brooders Dry.

Tell A. I. R. that I have discovered that a bunch of straw or hay two inches thick placed under Clough's lampless brooders, either outdoors or indoors, will keep the bottom dry. There will be no warping of the boards. This applies to hives as well in winter when standing low on the ground.

Aurora, Ill., Nov. 19, 1909.

V. W. CLOUGH.

Our Homes

By A. I. Root

To him that overcometh will I grant to sit with me in my throne, even as I also overcame and am set down with my Father in his throne.—REV. 3:21.

I think I have before used this text about overcoming; in fact, in the fore part of Revelation there are many beautiful texts about this matter of overcoming our fleshly appetites and promptings. God has implanted in us a craving for food, and in his loving kindness he has made most wonderful provision for ministering to our hunger. Again and again I am astonished and surprised at the great profusion of beautiful foods that are just within our reach if we will only put forth our hand and make use of them. In our next issue I have something to say right along in this line about that beautiful new berry of which God has permitted me to get a glimpse and taste; but just now we will consider something else.

God has implanted within us at least two powerful cravings for something that will bless us and do us good if we remember that text about overcoming, but something that will do us terrible harm, and send us down to the bottomless pit if we do not exercise reason and common sense. One extreme would make raving maniacs of the whole human family; "overcoming" makes each one of us, every child of humanity, a temple of the Holy Ghost, a place where that Spirit might dwell and bless us and all humanity. I shall now have to ask permission to touch on something right here that is not often considered very much in print.

Man as well as animals has at least two powerful cravings, or we might say instincts, that God has implanted in us for the preservation, not only of these bodies of ours, but for the perpetuation of the whole human race. I am sure you will excuse me if I go back to chickens once more, for they are my intimate companions, and I see in them God's loving hand from the moment they get out of the shell until they get to full maturity. When a chicken is two or three days old it begins to show its craving for food, and it very soon expresses its thanks to the one who feeds it; and I am sure it shows a sort of affection and gratitude. You can teach this newly hatched chick, or fifty or a hundred of them all together, no end of cute little tricks because of their craving for food. In fact, almost the only way to teach and educate domestic animals is through their love for food. A lump of sugar now and then, or a nice apple, will make a horse remember you, and be glad to serve you in any way in his power. Do not forget to win in this way the confidence and love and good will of every domestic animal you meet day by day. It will pay you in dollars and cents.

Well, your only avenue or gateway to dis-

arm the little chick of his fear, and enable you to teach him so you can call him or pick him up, is through this love for food. After the chick has had enough grain, say chick food, for instance, he will show a wonderful appetite for lettuce or other green stuff after he has smacked his lips over it a little and learned what it is. Then try a little flock, say a week old, with the crumbled yolk of an egg boiled hard, until they have learned what it is. They will have to examine it a little, and swallow some pieces before they understand what it is. But in just a few hours you can get them so crazy for egg that they will be chasing each other frantically all over the yard. Some chopped-up meat or ground bone will answer a good deal the same purpose to satisfy the craving or nature's call for something that will make muscle, bone, and feathers.

Well, now, these chicks show nothing but an appetite for food until they are five or six months old. Then the male portion of the flock will have to be separated from the pullets. They have arrived at the age when nature manifests a most powerful impulse and instinct besides the craving for food. When I got back from Florida, business was crowding to such an extent that my flock of poultry here in Medina had been neglected. They had food enough, but I found *eighteen* full-grown cockerels with about sixty of the other sex. Of course I made haste to put them in the cockerel yard, and clipped their wings so they could not get out, until I could dispose of them in various ways. Their inclosure permitted them to get a glimpse every day of the yard containing the laying stock, and it was interesting to me to study this wonderful instinct I have been speaking about. The eighteen cockerels would not fight or quarrel at all so long as none of the other sex were present.

We will now, if you choose, bid good-by to the fowls, at least for the present. Humanity has appetites in many respects much like those of the chickens. These appetites are gifts from God, and, under proper restraint in the line of "overcoming," they bless humanity and the whole human race; but if permitted to have full sway, without being controlled by reason and common sense, man becomes a raving maniac. Witness delirium tremens on the one hand, and on the other the insane and idiotic asylums, and this nameless crime that prompts men to risk being lynched, or, perhaps, being burned at the stake. When we see how many have been cut to pieces, strung up on a tree, or burned to death by a crazy mob, we wonder how anybody but a crazy man should be tempted to give way to such insane folly; and the crowd that puts them to death without judge or jury is almost as crazy and as much to blame as the poor victim, the colored man, who gives way to his insane passion.

Dear friends, what I have given in the above is only a preface to what seems to be going to prove a great and wonderful reve-

lation from God to the whole human race. May be I am a little extravagant; but you know how much I have said as to the awful waste that is going on here in the United States in the way of spending so much time and money to feed our people. That beautiful prayer says, "Give us this day our daily bread;" but the world is in such haste scrambling after new and good things they seem to have forgotten all about the "bread." Note the multitude of dishes that even yet load down our tables, and as a result employ an army of doctors, surgeons, and specialists of different kinds, besides another and greater army of trained nurses at \$4.00 a day or more, besides the expense of asylums and hospitals for the sick and suffering. I have asked myself, "Is there a remedy, and will there be a turning-point?" Thank God, there *is* a remedy, and the turning-point has come. God has been sending us John the Baptists and other great teachers and forerunners. I told you about Terry's work in our issue for March 15; and I closed the article by what I still consider a wonderful message from Upton Sinclair. Terry, Fletcher, Sinclair, Dr. Kellogg, and hosts of others, are striving to wake the people up and make them understand and *comprehend* why people have aches and pains, sickness and death. With all the advantages your old friend A. I. Root has enjoyed (a near neighbor, comparatively, of T. B. Terry), not until he was *seventy years old* did he discover he could be happier and in far better health without a carefully gotten-up supper, or *any thing* but a few apples after the noonday meal.

Now, I have something more to tell you about this man Upton Sinclair. He is a young man, or comparatively so, and bids fair to be young (if he keeps on) for many years to come. If you have not all read his talk in the March 15th GLEANINGS, I wish you would get right at it and read it, and then after that, hunt up the *Cosmopolitan* magazine for May. If you have not one handy, send and get it. Read Upton Sinclair's article on "starving for health's sake." After you have read it, pass it round to the neighbors. Get as many folks to read it as possible. My first acquaintance with Sinclair was in reading "The Jungle," that book that exposed the *meat* condition of things in our nation—the book that caused President Roosevelt to send for the author and have a conference with him. Now, please do not understand that I thoroughly approve that book, "The Jungle." While I read it and was charmed by the author's wonderful descriptive powers, I was also pained because of some things that I thought should have been left out. Another thing, I could see he was not a professing Christian, and I fear he is not now. Yet he quotes the Bible, and seems to understand what true Christianity is. May the Holy Spirit guide him, and open a way for him to make *still further* discoveries that will benefit the human family. Well, when you read that article

in the *Cosmopolitan* you will discover that Sinclair has gone a little further than I have in dispensing with suppers. When his digestion would not stand the close confinement of writing books and articles for the magazines, he began to skip a whole day, then two days, and then three and four days, and, like Dr. Tanner (who, by the way, was a Medina Co. boy), he found out that people could live a dozen days or more, and not "starve to death" either. By the way, when Sinclair's health began to fail (perhaps through confinement and overwork) he went to Battle Creek, Mich., and there became acquainted with Fletcher and Dr. Kellogg. They three discussed for several days, or perhaps weeks, the food problem and the health problem for a nation of people. At this period in his life Sinclair wrote a book entitled "Good Health, and How We Won It."* It is a nice large book, well illustrated, and the price is only \$1.20. If some of our experts in poultry, while giving some of their systems, would give us a book like this (almost 300 pages) for the price they charge, it would look a good deal better, if nothing more. Well, this man Sinclair has all his life seemed determined to put *bodily health* and *vigor* of both mind and body far above the gratification of *any* appetite. "He says in the *Cosmopolitan*, 'I have never in my life used tea or coffee, alcohol or tobacco.'" Oh that our great teachers (and great doctors, too), by the way, could stand up before the world and look their pupils full in the face, and say what Sinclair has said! After Sinclair had put on flesh, and got to be almost an athlete, like our neighbor Terry, he felt prompted to give a suffering and sinful world the benefit of his discoveries. He discovered that a man can grow fat by starving himself. You want to get that magazine and look at *pictures* of himself and wife, if you can not take time to read the whole article. I told you that going without my supper of nourishing food gave my digestive apparatus an opportunity to clean out, slick up, and mend things that were breaking down, etc. Well, Sinclair gives the human form divine a still better chance by going without food for several days. Of course he loses flesh; but in an incredibly short time he *gains* flesh again. After a fast of ten or twelve days he commences by drinking milk—a glassful every hour following this with more substantial food later on. He finally gained 32 lbs. in 24 days. After he had tested the matter again and again, and secured such marvelous strength and energy, his wife, who had been for years an invalid, was prompted to try it, although they feared she could not stand the ordeal; but now she too is a smiling picture of health. Look at the picture.

Like T. B. Terry, Sinclair has *nothing to sell*. He has no pay in any shape whatever, save what the magazines and his books bring him. He is beating a path through

* Frederic A. Stokes, publishers, New York.

the wilderness where all the world can follow if it chooses. He and his wife both say that, after the first day, they experienced but very little inconvenience from hunger; in fact, she walked four miles every morning with her husband for six days in succession.

Now, here something funny comes in. People lost at sea or out on the desert starve to death in a week or less. Perhaps it is because they can not get good pure water. Sinclair drinks freely of pure water, all through his fast, but nothing else. At one time while in California, after having taken a fast of three days, and walking about fifteen miles the last day without any trouble whatever, he came home and read about the Messina earthquake. The papers said when food was brought to those suffering people they tore each other like wild beasts because they were crazed with hunger, for they had been *seventy-two hours* without food. Sinclair also had been without food for the same length of time, and just felt *good and happy*, even after he had walked fifteen miles. How can this be explained? It is very simple. Sinclair's fast was a deliberate and voluntary one; but the Italian people were ignorant, and probably frightened. They did not know any thing about self-control, and had never heard the beautiful text about overcoming. When God created man in his own image he intended man should be Godlike, and have the ability to *rule and to overcome*.

Some of you may be inclined to say right here, "Well, old friend A. I. Root, why don't *you* fast for a couple of weeks and tell us about it? Write up a Home paper, for instance, after you have been two weeks without food, and after you have walked several miles, say toward the last day." Well, dear friends, I have been considering it; but while I am feeling so well, what is the use of my fasting? If I have any more attacks of grip fever or chronic dysentery, I will most assuredly try to follow Sinclair. By the way, he says in that magazine that you had better try it where you can consult daily with some one who has had *experience* in the fast cure. He says the greatest danger is that one gets frightened because friends and relatives declare he is killing himself, etc. Ernest and Huber both protest against my making such an experiment, because of my age; but I feel sure that, if I should undertake such a task with the sole end in view of benefiting humanity, God's Holy Spirit would give me strength, both of mind and body; and God knows that the lesson that is needed just now is one of "overcoming" the promptings of appetite, especially remembering we have it in the words of holy writ, that these bodies of ours are intended to be "temples of the Holy Ghost," and that God did not send us into this world solely to have a "good time" in eating and drinking, and ministering to our lower and baser passions.

May the great Father lead us and guide us; and may he bless Sinclair, Terry, and

Fletcher in their efforts to show us how to attain physical perfection, and how to develop into that *glorious manhood* that the Creator had in mind when he placed us here in this beautiful world of ours.

Ernest declares I must not close this article without quoting a tribute that Sinclair pays to our old friend Dr. Salisbury. Our older readers may remember that our journal has had more or less to say about the Salisbury treatment for the past twenty-five years. Here is what Sinclair has to say in regard to it in the article in the *Cosmopolitan*:

For several months after this experience I lived upon a diet of raw foods exclusively—mainly nuts and fruits. I had been led to regard this as the natural diet for human beings; and I found that so long as I was leading an active life, the results were most satisfactory. But when I came to settle down to a long period of hard and continuous writing I found that I had not sufficient bodily energy to digest these raw foods. I resorted to fasting and milk alternately—and that is well enough for a time, but it proves a nervous strain in the end. Recently a friend called my attention to the late Dr. Salisbury's book, "The Relation of Alimentation to Disease." Dr. Salisbury recommends a diet of broiled beef and hot water as the solution of most of the problems of the human body; and it may be believed that I, who had been a rigid and enthusiastic vegetarian for several years, found this a startling idea. However, I set out to try the Salisbury system. I am sorry to say that it seems to be a good one; sorry, because the vegetarian way of life is so obviously the cleaner and more humane and more convenient. But it seems to me that I am able to do more work and harder work with my mind while eating beef-steaks than under any other régime; and while this continues to be the case, there will be one less vegetarian in the world.

Poultry Department

By A. I. Root

KEEPING CHICKENS IN FLORIDA, AND SOME OTHER THINGS.

I give the following letter entire because it is a sample of the many kind words that come for my department almost continually. If kind words give inspiration as well as zeal, I certainly ought to have plenty of both.

Dear Mr. Root:—I take the liberty of writing to you and calling you "dear friend," as it seems to me as if I had known you nearly all my life through reading your articles in GLEANINGS, of which I have been a subscriber, off and on, for over thirty years. I think your writings have done more for me in the line of trying to live a Christian life than any other one thing—that is, through reading Our Homes. Long live GLEANINGS and the editor of the Homes department.

I wish to ask you a few questions. What is the average price of eggs and of different kinds of grain for feeding, as well as the price of land suitable for raising chickens in your part of Florida? also the price of lumber for building poultry-houses? I am 44 years of age, without a family, and one of the biggest chicken cranks in the country. I have some means, and should like to go to Florida and engage in the chicken business. Your poultry department I read with great interest, and have derived many good points therefrom. I am no stranger to the poultry business, as I have kept as many as 400 at a time.

I have just read T. B. Terry's book on how to keep well, and intend to practice some of his precepts. Binghamton, N. Y., April 26. H. S. THOMPSON.

When I reached my Florida home last November the grocers were paying 40 cents

a dozen for eggs. As they claimed that this price was exactly what they sold them for, we were expected to take our pay in goods; but as they sold all kinds of grain and chicken feed this was easily managed while we had only about 75 laying hens. The prices of the grain in 100-lb. sacks were as follows: Corn, \$1.70; wheat, \$2.30; and a mixture of broken corn, wheat, and other grains, called "corno," was \$2.40 per 100 lbs. We found it rather cheaper to buy the corn and wheat; but as the corno gave a variety which the poultry seemed to enjoy, we fed it more or less with other grain. Oats cost \$1.65, and we used quite a quantity of them for sprouting, especially when we were not able to get lettuce refuse of Bro. Rood. Sprouted oats were furnished by soaking a pailful of oats over night, and raking them into the ground next morning. We endeavored to put in a sufficient quantity, so there were always more or less sprouted oats in all the five different yards. The two acres of land where we keep our chickens cost \$150 per acre; but we are only one mile from the grocery where we bought our supplies. Further away, one could get land at almost any price, say from five to ten dollars per acre and up. A good many make a mistake, however, by not counting the cost of getting to the depot and market through the Florida sand. A great deal of the ground around Bradentown is covered with different kinds of wild grasses, so that it makes a very fair road without very much expense for cleaning off the brush, etc. But where there is a heavy traffic, such as occurs in hauling a big crop of celery to market, the sandy soil soon cuts up so it is sometimes quite a job for a horse to draw even an empty wagon through these sandy places. Notwithstanding the fact of being at a distance from market, I do think that Florida offers wonderful opportunities for the poultry business. Before I forget it, however, I must not fail to mention that eggs went down to 30 cts. not long after the holidays, and then for quite a while they were 25; and when I left Florida the last of April the price was down to 20 cents; but the price seldom goes lower than that.

I have before explained quite fully, I think, that very little outlay is required for buildings of any sort. In fact, the grown-up fowls will roost in the trees, and get along very well without a building of any kind. There are two drawbacks, however, where they are up in the trees: You can not catch them when wanted; and owls and other animals are liable to molest them.

In regard to lumber for building poultry-houses, etc., we get plenty of cull flooring for only \$12.00 per 1000, and our five houses were made almost entirely of this stuff. A very little cheap 2x7 for sills is all that is necessary. The cull flooring and the 2x4 will make such a building as I have pictured and described on page 165.

In conclusion, let me say again that it is beyond my comprehension why more people do not go into poultry, and succeed, down in sunny Florida. Cockerels that

were hatched out in December weighed 2 lbs. each in April, and sold readily for 25 cts. per lb. at the same grocery where I sold my eggs. Fifty cents apiece for chickens four months old is what I call pretty good business. So far as I can learn, there is not a person in Florida offering baby chicks for sale. The pastor of the Methodist Church came down one day, and, after looking over my chicken-ranch, he was so much taken up with it that he at once sent away to *Attica, Ohio*, for 100 baby chicks. He said they offered them for \$8.00 per hundred, safe delivery guaranteed clear to Bradentown. Just think of it! people in a land of almost perpetual sunshine sending up to stormy and wintry Ohio for chicks, and then paying express charges for a distance of toward two thousand miles! It reminds me of the time Eugene Davis told me he had orders for Grand Rapids lettuce, grown in midwinter in Michigan, to be shipped to *New Orleans*, where lettuce can usually be grown in the open air the year round.

Perhaps I should mention one of the objections to the chicken business in Florida; and this is, the stick-tight fleas and other insect pests. Well, although these stick-tight fleas did bother both *us* and the chickens, a year ago last winter, during the winter just past there was hardly a flea visible. Perhaps one reason is that we had plenty of rain all winter, and this is generally death to those insects. Another is that I kept the buildings, and especially the roosting-poles, pretty well saturated with Lee's lice-killer, put on about once a month with a spray-pump. I examined my chickens carefully, both old and young, almost every day, all winter, and I found scarcely a trace of lice or fleas. Besides the spraying we put strong tobacco dust in all the nests. Our 75 laying hens paid the grocery bills for myself and wife, and paid for all the grain for not only the 75 adult fowls, but the entire feed for over 200 chickens.

Of course, I have made no estimate in the above of the time spent with the chickens; but I have kept them just for the fun of it, and not to make money. It gave me healthy outdoor exercise, and paid all the expenses for Mrs. Root and myself; and what more can old people like myself want, any way? Of course, we had plenty of eggs; and (take notice) we had them, even if they were 40 cents a dozen. That made very little difference to us.

BUTTERCUPS UP TO DATE, MAY 6.

My three pullets commenced laying about April 1st, when they were about six months old; and were it not for the fact that one of them persists in laying a good many eggs without a shell, the record of the three would be rather ahead of any of my records with White Leghorns. My brother, who is still in Florida, reports two eggs every day, almost without exception, and quite often three, not counting the shellless ones. I presume this peculiar trouble with the one pullet can be remedied. We are going to do our best at it.

High-pressure Gardening

By A. I. ROOT

ANOTHER OF MY "HAPPY SURPRISES;" THE
NORTHEY BLACKBERRY.

Just once in my life I was called on to take the place of a lecturer belonging to a lecture bureau. My talk was on "happy surprises." I said I had been meeting all my life long with happy surprises, and I expected to find them, even down to old age, or as long as God permits me to live. I said, furthermore, that every follower of the Lord Jesus Christ had a right to expect once in a while a "happy surprise." It was years ago that I gave that talk, and I have thought of it a good deal since. If you wish to enjoy having happy surprises, you must not expect too much. You must not expect too much of poor, infirm, imperfect humanity. You must not expect too much of new localities—Florida, for instance. You must not expect too much when you venture into agriculture, fruit-growing, and raising chickens, for instance. Make up your mind to be satisfied with *small* rewards; and when a big reward does come you will have your happy surprise. You must not expect too much of *yourself*. Do not get the big head. When you get up in the morning and plan what you are going to exploit during the day, do not make your calculations too high. Something is always going to happen that you do not plan for. Remember the words of the dear Master when he said, "Let him that would be greatest among you be your servant." Start out for a lowly place and for lowly things in this world; then when you are called on to "step up higher" you will not only appreciate it, but you will be better fitted to fill the station right.

After this long preamble I wish to tell you something that was indeed a very happy surprise. My neighbor Ten Broek is, like myself, an elderly man, and on account of old age, principally, he is not taking the care of his five acres of land over the fence from my own that he took in former years. At different times he has planted different kinds of tropical fruits on his premises; but as he does not raise stuff to sell, or to only a very limited extent, so long as he has plenty for his own use and to give to his neighbors when they call on him he does not care much about getting great crops. To come right down to it, his place is mostly overgrown with brambles and weeds; and I suppose if he likes to have it that way his neighbors should not object.

Well, I noticed several times along about the middle of April some very large blackberries or dewberries, perhaps you would call them, as it is a trailing bush, scattered in different places over his premises. One day I happened to turn aside from the path not very far from his front door, and I discovered something that made me raise both

hands and say, "Praise God, from whom all blessings flow." I thought at first that it was this same trailing blackberry; but from the few that were just getting ripe I decided it was something else, for they were red instead of being black when fully ripe—a most beautiful glittering deep vermillion red. And that was not all. When I came to test one that was fully ripe and mellow I said it was certainly the most delicious fruit of any sort that ever passed my lips. Now, that is not all. This new plant or berry, for it certainly was new to me, covered a space perhaps as large as a good-sized dining-table. It was rounded up in the center perhaps two feet high—a beautiful oval mound, and this oval mound was, a few days later, a perfect mass of the most gorgeous and beautiful fruit I ever saw on any fruit-bearing plant. Now, that is saying a good deal, friends, for I have seen choice specimens of fruit-bearing trees and bushes pretty nearly over all the United States. When I came away from our Florida home, April 19, the great mound of berries was glittering and sparkling with the gorgeous fruit *all over* that mound; and, as if to set it off with a border, little plants had started out like the rays of a star in all directions; and these little plants were *also* glittering with beautiful fruit. Mr. Ten Broek did not seem to think very much about it, for he was accustomed to such sights. I called the neighbors in, right and left, and made myself at home in his berry-patch until I began to fear he might feel I was trespassing; but my good friend Ten Broek (and he has been my friend for many a long year, for he took GLEANINGS before he ever saw me), when I began to apologize for taking so much liberty, said to me and the friends I had brought along with me, "You need not be troubled, neighbors. My good friend Root has full permission to help himself to *every thing*, and do *any thing* he chooses to on my premises." At this there was a big laugh. But I took advantage of the invitation, and *did* help myself to those wonderful berries. Oh, dear me! if John Lewis Childs should see what I have written above, and go down there and see that "wonderberry," what would he not do with it? Well, I started to tell you that, for fear this berry might be poison, like the nightshade, and do harm to humanity, I thought I would give it a good test, and so I ate and *ate* of these ruby blackberries until I certainly would have been injured if they would injure anybody. But they just made me feel good and happy.

When I asked neighbor Ten Broek what kind of cultivation he gave them he said he never gave them *any* cultivation at all. He bought one plant at Reasoner Brothers' nursery, Oneeo, Fla., four years ago, and it bore some fruit right away; more the next year, more the year after, and so on until the present season. *He gave it no cultivation whatever.* It just spread out, took root, and managed every thing after its own sweet will. After I learned where he got the plants I told Mr. Reasoner he had better come and

take a look at it. He did not come, but sent me the following:

Dear Mr. Root:—Your letter of the 13th is at hand. I am delighted to know that Mr. Ten Broek has made such a success with the Northey berry. The only enemy it has seems to be the thrips. These are driven off by free use of tobacco, which should be used either in powdered form or in liquid extract form just as they begin to bloom. We have a fair stock, and can supply a good many for next winter. The pot-grown plants, of which we have quite a number, may be set *any time*. I shall be pleased to give you some plants. Just say how many you want.
E. N. REASONER.

Oneco, Fla., April 14.

Of course I got neighbor Rood to go over and look at it. He agreed with me in regard to this wonderful tropical fruit, and I believe he also agreed that it was the most delicious berry he ever tasted.

Now, if I should drop this account right here, would it not be a magnificent advertisement for the Northey blackberry? I found by inquiry that the berry had been known for some years. It very much resembles what our California friends call the Logan berry. I ate quite largely of them some four or five years ago when on the Pacific coast; but, so far as I can recall, this Northey berry has a most exquisite and peculiar flavor that the Logan berry did not have. After the originator of the fruit died, the plant was neglected for some years. Then Mr. Reasoner got hold of it and put it in his catalog, and has sold plants to a considerable extent. My neighbor, Mr. Rood, put out quite a little plantation a year ago or more; but for some reason they did not thrive on his land like the one big plant I have mentioned. Mr. Rood cautioned me a little about making an extravagant write-up. He said, so far as I can remember, something like this:

"Neighbor T. used to have a garden right here where that plant stands, and I think he had gotten the ground up to a pretty good degree of fertility. Another thing, the ground seems to be a little springy on that spot. Right near the plant is an old well, and the water stands within two or three feet of the top of the ground almost the year round. That spot seems to enjoy a sort of natural sub-irrigation."

Just one thing more: Overalmost all the State of Florida, the weeds and the commons get burned over almost every year or oftener. Some claim it is better for cow pasturage. Well, Mr. Ten Broek has never permitted his ground to be burned off or pastured off. The luxuriant tropical growth has been coming up and dying down or rotting down every year for fifteen or sixteen years with little or nothing taken away. The consequence is, it has become covered with a lot of humus and vegetable growth, making it in good condition to grow almost any thing. That is why these berries are so much ahead of mine.

You will notice, from Mr. Reasoner's remarks above, that he speaks of thrips; and I think it is those same thrips that hinder Mr. Rood's Northey berry from bearing. There are no thrips nor signs of them on

Mr. Ten Broek's premises. I can not tell why unless it is because of the exceedingly strong thrifty growth.

Mr. Ten Broek has no plants for sale. When I spoke about writing it up he said I should say to you all that he did not want to be bothered with correspondence on the subject. Mr. Reasoner, however, will probably be able to give you plants enough to test it in most localities. I have quite a lot set out near my Florida home, and am going to give it a trial here in Ohio. Perhaps it might save you trouble by saying that Mr. Reasoner's catalog price for potted plants is 25 cts. each.

I have given this Northey berry a write-up because I feel it is going to be a blessing to humanity. One such mound of berries as I have described ought to be worth ten dollars to a family where there are several children. Yes, there is one other difficulty. It is not a "thornless blackberry," as you will soon discover if you get it to grow on your premises. But you know there is scarcely "a rose"—that is, a real nice one—"without a thorn."

SELLING SECRETS, ETC.

The following, from Prof. A. A. Brigham, of the College of Agriculture of South Dakota, explains itself:

Mr. A. I. Root:—Confirming your criticism in GLEANINGS, page 276, concerning a cheap and sure (\$1.00) method of exterminating lice and mites, let me refer you to page 139 of "Progressive Poultry Culture" for the hydrocyanic-acid-gas treatment, and to the previous page for brimstone fumigation, these methods being given, not as "secrets," but as plans in use. The book (of which you have a copy) has been published nearly three years. These methods were published often before that. If needed I can tell of experiences of mine where the hydrocyanic treatment proved *expensive* and *unsatisfactory*, while the old-fashioned "hell-fire" proved *economical* and *effective* in destroying the pestiferous parasites. The former case was that of a brooder-house 40 feet long that had stood empty for over a year, and yet was swarming with mites. I will not burden you with the recital, however, unless you wish it.

I desire to thank you for your earnest exposure of so many frauds and fallacies of the present day.
Brookings, S. D., April 27. A. A. BRIGHAM.

In view of the above, does it not seem as if the Postoffice Department at Washington should refuse to deliver mail to men or women who deliberately go into this kind of graft—charging a dollar for a simple process that they have copied from some printed book or journal?

In turning to the page mentioned above, I found the process given in detail. Thanks to Prof. Brigham for having called our attention to it. I should like to have him tell us all about banishing the pests from that forty-foot brooder-house.

KIND WORDS FOR THE HOME DEPARTMENT.

I have been reading a few numbers of GLEANINGS with profit on general subjects; but if you could know the great help which I have received from Our Homes it would cheer your heart and fully repay you for all that you have given in that department. Let the good work continue.

Cushman, Mass.

ASA V. SNOW, M. D.

Gleanings in Bee Culture

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Editorial

VERY soon a good many amateurs will have trouble in getting the bees to work in comb-honey supers. Frequently the reason is that there is, or has been, too much room for honey in the brood-combs.

A GREAT BEE-SUPPLY YEAR.

OUR manufacturing department has been running night and day, and it is just nicely keeping up with orders. Evidently, if the call for supplies means any thing this is going to be a great year for honey. A year ago there was an unprecedentedly heavy demand for bee-keepers' supplies. After the failure of the honey crop of last season it was naturally expected that this would be an off year, and that most of the supply dealers would have a light season. They have been happily disappointed.

NEW IDEAS.

WE are on the constant lookout for bright, glittering ideas, new kinks of the trade; short cuts; some plan or method to save labor and make the business profitable. We are willing to pay for these ideas, and therefore solicit drawings, models, and photographs; but don't—don't for goodness sake—send us any more schemes for wiring frames or any model or drawing of a new feeder. There is no use in wasting time on them. They are of minor importance, and we can well afford to turn our attention to something that touches more the fundamentals of the business.

TO WHAT EXTENT HAVE FRUIT INTERESTS BEEN DAMAGED BY REASON OF THE RECENT COLD SPELLS?

A SUBSCRIBER wishes to know to what extent the fruit has been killed throughout the country by reason of the late frosts and freezes. In this locality very little has been hurt; but there are sections in the North and Northwest where the late cold spell has done great damage to the fruit-growing interests, especially the apples. While we certainly regret the damage to the fruit-growing interests, yet what is a loss to the fruit-grower is, in an indirect sense, a gain to the bee-keepers. When fruit is scarce there is more demand for honey, and at better prices.

THE LATE SPRING CLOVER VERY PROMISING.

REPORTS from all over the country show that the very early spring was delayed by cold or rainy weather. Even at this writing, May 25, the trees in our locality are only just fairly leafed out, and some of the earlier varieties are almost as bare of leaves as they were in the winter. Reports also show that clover has made a wonderful growth. As this is a natural clover year, and conditions have been exceedingly favorable, we are expecting clover honey all through the clover regions.

The deferred warm weather, on the other hand, is going to mean some weak and starved colonies.

WINTER LOSSES CONFINED TO LIMITED AREAS.

SOME reports have been coming in, showing that there was very little loss of bees in the northern climates during the winter, and no loss in the extreme Southern States; but there was a heavy mortality among bees wintered in single-walled hives just a little north of the Ohio River and in the vicinity of Pittsburgh. The very cold winter caught those bees that were not prepared, especially those wintered in single-walled hives. There has been, as a consequence, an unusually heavy demand for bees and queens. Our home yard alone has sold over three times as many bees this year as during the corresponding period of a year ago.

POISONED BEES.

AS USUAL there have been a few reports from bee-keepers who wondered why their apparently healthy bees suddenly began dying in large numbers. Of course, the trouble does not always turn out to be a case of poisoning from fruit-trees that have been sprayed while in bloom, but it does sometimes. We believe, however, that such cases are becoming rarer. It has taken the fruit-growers a long time to learn that they are doing themselves a double injury when they spray the blossoms—not all of them have learned it yet—and meanwhile the bees, the fruit-growers' best friends, have had to die by the thousands.

DO BEES WORK MORE READILY ON FOUNDATION THAT IS FRESH?

A FEW years ago there was some discussion on this question, and the reports rather indicated that the fresh foundation was to

be preferred to that which was old. On p. 106 of the Feb. 15th issue, F. Greiner mentions the fact that S. D. House prefers to fill his sections with fresh foundation the very day he wishes to put them on his hives. Since this statement was published, however, we have heard from a number of our readers, and the general agreement seems to be that there is practically no difference between the old and the new foundation as to the way in which it is worked by the bees.

In the April number of the *American Bee Journal*, Dr. Miller was asked what he thought of the matter, and he replied that, although he would put his foundation in sections and have it on the hives within 24 hours after it left the mill, if possible, he thought that, after all, the difference between the new and the old was very little. He cautioned his questioner, however, against putting old foundation on the hives when the bees were idle. This is good advice, and just as good, too, when applied to fresh foundation, as it is a bad plan to put foundation, old or new, over hives during a time when the bees are idle.

Mr. C. P. Dadant, in the May issue of the *American Bee Journal*, in commenting on Dr. Miller's answer as mentioned above, gives a very nice explanation of why there may be some difference of opinion in this respect. He points out that foundation after a time becomes brittle, just as fence wire, even though galvanized, becomes more brittle after a few years. This foundation that is old and brittle can be rejuvenated by being warmed again. Mr. Dadant selected a piece of foundation two years old, and another piece that was fresh, and filled a brood-comb with each kind, putting both combs in the center of a cluster. He found that both sheets were drawn out, and eggs laid in the cells. As soon as the foundation became crowded with bees the animal heat warmed it enough so that it became soft and pliable again, and therefore lost its brittleness. Mr. Dadant points out, further, that if both the old and new are put into *supers* the bees, because of a lack of sufficient warmth at the start, will not hesitate to appropriate the new more promptly because it is more pliable.

GIVING CELLS OR JUST-HATCHED VIRGINS TO QUEENLESS COLONIES; TWIN OR SINGLE NUCLEI FOR QUEEN-REARING.

FOR over a year back our Mr. Bain and our Mr. Pritchard, each in charge of different queen-rearing yards, have been pursuing slightly different methods. Mr. Bain, for example, claimed that he could get better queens by introducing just-hatched virgins to his baby nuclei. Mr. Pritchard, on the other hand, claimed that too many of these virgins were killed for him, and he found it very much better to give cells, allowing the young queens to hatch out rather than be let loose.

Both men are good queen-breeders, and

we were at a loss to account for their seeming difference of experience. Mr. Bain right along demonstrated he could introduce these young baby queens to his nucleus hives. He objected to giving cells because the cells, he said, could not locate themselves in the warmest part of the cluster; and, besides, he averred you could not tell from the looks of a cell what kind of a queen was inside. If a scrub or deformed queen hatched, she must be destroyed and another cell given, wasting time. Mr. Pritchard, on the other hand, said that, while he could introduce these virgins, the bees would then, gnawed their wings, perhaps tore off a leg, and too many of them had to be discarded because of their rough usage.

Yesterday, May 24, Mr. Bain called us out to the yard and said he had found why it was Mr. Pritchard could not succeed in introducing just-hatched virgins to his nuclei. "Why," he said, "it is as plain as day when you come to think about it. Mr. Pritchard uses *twin* nuclei—a bunch of bees and two combs on each side of the division-board—while I pull out the division-board and use the *whole* nucleus box." Then he added, "I have been trying a lot of these twin hives, and I find, like Mr. Pritchard, I can not introduce virgins successfully. Here is the explanation: The side of the nucleus that has a laying queen will draw largely from the other side."* So saying he showed us a number of "twins" having a laying queen on one side and a cell or virgin on the other. The side with the laying queen in every case had the stronger bunch of bees.

"Now, then," he said, "the influence or odor of the laying queen on the strong side seems to permeate the other side; and when we let loose a virgin they just kill her. But we can give that side a cell; and when that cell delivers its virgin the bees accept her. Again, suppose I take the laying queen out of the strong side and give it a cell. In the meantime the virgin on the other side begins to lay, when almost immediately her side will draw from the other that probably has only a virgin or possibly nothing. You see, the trouble with these twin nuclei is that the side that has the laying queen seems to dominate to a great extent the side that has none. Now when each nucleus is on its own hive-stand, remote from any other bunch of bees, it is possible to introduce these day-old virgins right along. I tell you, Mr. Root, I do not want any more to do with these 'twins.' I want to select my virgins—that is, cull out all but the very best, and give these very best to the mating nuclei."

Mr. Bain went on to explain that we can give two virgins simultaneously, one to each side of a "twin," and all will be well, because one side has no advantage of the other in the queen.

*The entrances to these twins are on the diagonally opposite corners. It is evident that the odor of the laying queen draws the flying bees over to the entrance where she is laying.

SOME WAX-RENDERING METHODS OF EXTENSIVE PRODUCERS.

In the April issue of the *Bee-keepers' Review*, Mr. Hutchinson describes the apparatus that Mr. W. J. Manley, of Sandusky, Michigan, uses for rendering wax on a large scale. Nearly all of these appliances are such as can be made at home with the help of the local tinsmith and blacksmith. Aside from a few details of construction the general plan of procedure is just about the same as the one which we have used for about two years, and which we have recommended as being the best plan, all things considered, for the average bee-keeper. Possibly an exceptionally large producer of wax would require more expensive apparatus, but we believe that there are few who produce wax on a larger scale than does Mr. Manley, and it is doubtful, therefore, whether a more expensive outfit would be needed by many bee-keepers.

The comb is melted in a common wash-boiler on a stove, with plenty of water. While this is being pressed, another batch is melting in another boiler. The contents of the first boiler are dipped and poured into a burlap sack inside the press, and all the water is retained so that the refuse is kept in the hot water. After the pressure by means of the screw has been applied for some time, the screw is raised and the hot water again allowed to saturate thoroughly the contents of the sack, on the Herschiser plan. The screw is then turned down again, and the slumgum given another pressing. This can be kept up as long as desired, or until practically all of the wax is pressed out of the cocoons, so that it rises to the top of the water. All the water and wax is then poured into a large separating-tank with a faucet at the bottom, and a gate part way toward the top. Hot water for the next boilerful may be drawn from the faucet at the bottom of the separating-tank; and whenever the layer of wax gets thick enough the pure wax may be drawn off through the gate near the top of the can. The process is thus continued, and a large number of cans, pails, etc., are not needed. In the side of the separating-tank Mr. Manley has a strip of glass so that one can tell where the dividing line is between the wax and the water. When this line is below the upper gate, clear wax can be drawn off. If the dividing line should happen to be just at the gate, a good deal of the sediment that settles into the water beneath the wax would be drawn off into the mold. For this reason the glass in the side of the tank is an advantage; and while we have never used this, we can see that it would be a great improvement. The sediment can be left right in the separating-tank, and lifted out of the water with the thin layer of wax finally left to cool. The hot water may be used over and over again.

While we agree with every step in the system of rendering wax as practiced by Mr. Manley, we believe that, in the matter of the press itself, a change in construction could be adopted that would be both cheap-

er and handier. Mr. Manley has succeeded in building a press depending on the can alone for supporting the bottom, cross-arm, etc.; but the average blacksmith has so little idea of the tremendous pressure exerted by a screw in this way that he generally has to rebuild an affair of this kind about three times before he makes it strong enough so that it will not break. Mr. Manley uses a spider riveted to the side of the can near the bottom. He also uses side hooks for securing the cross-arm to the top of the can, after the construction of the German wax-press. But unless reinforced so heavily as to make the construction pretty expensive, this plan is sure to be too weak for the enormous pressure exerted, and on this account we have always used a plain can made of ordinary heavy tin with a hoop around the top. Our oak cross-arm is supported by a wooden framework and by means of heavy bolts which extend from the cross-arm down through the platform underneath the can. The oak framework is a little cheaper construction, and a much stronger one, and it has the further advantage that it is very easy to attach a couple of hinges to the front of the platform so that the whole press may be tilted up on edge to pour off the wax and water after the last pressing. This avoids the heavy lifting of the hot press, and facilitates the work in every way. When it is desired to lift out the contents of the burlap sack after the wax and water have been poured off, the screw is simply turned up as far as it will go, and the can slid out from under it to a position on the front of the platform, where it is very easily refilled.

In the Feb. 15th issue of *GLEANINGS* for 1908, page 210, Mr. R. F. Holtermann described the Sibbald wax-press, which was very much like the well-known Hatch-Gemmel wax-press, with this exception, that Mr. Sibbald allowed the water to remain in the can so that the refuse would always be submerged. Mr. Sibbald also advised pressing three cheeses at a time by means of slatted division-boards. We are sure that it is a good plan to keep the water in the can during the pressing; but we do not believe it practicable to press more than one cheese at a time in an unheated press—that is, in one which does not stand over a stove or is not heated by means of steam, etc. Apparently, Mr. Manley has also found that it is best to press but one cheese at a time.

A few years ago there were not many bee-keepers who saw the need of a good heavy press for extracting wax from old combs, believing that the solar wax-extractor got practically all of it; or if they did not use the solar they simply boiled up the combs in a kettle, weighted down the refuse with a screen, and dipped the wax off the top of the water—by this process throwing away wax by the hundreds of dollars' worth. It indicates progressiveness when extensive producers like Mr. Manly advocate a method which is both rapid and thorough.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

DOOLITTLE's plan for introducing, p. 247, is entirely safe. I used the same plan, only I merely put the queen and brood in a hive and set it over a strong colony with double wire cloth between the two stories. Less trouble, and safe if weather is warm.

IT IS TRUE, as Mr. Simmins says, p. 324, that $\frac{1}{8}$ inch greater thickness of a bar makes a greater distance from the brood-comb to sections; but is not the disadvantage over-balanced by the advantage that, the further apart brood-combs and sections are, the whiter the sections will be?

"Do ROSES offer any thing for bees to work on?" is a question discussed with some warmth in *L'Apiculteur*. Some accept and some denounce my statement in a Straw, that bees had torn open buds on my roses. M. Gaston Bonnier, whose opinions are always entitled to respect, says the bees could only have been after pollen.

J. E. CRANE is quite right in saying size of entrance for wintering depends on what's on top, p. 309; and that's true whether outdoors or in the cellar. My bees in the cellar have a 12x2 entrance with sealed top. When I first cellared bees it was just the reverse—every thing sealed tight at the bottom, and all open at top. The whole hive (box hive) was just turned upside down.

ABBE GUYOT has an out-apiary of 9 colonies, 75 miles distant, which he visits only once a year, just to harvest the crop! In his brood-chamber he has 15 frames 13x13—a little larger than a Langstroth frame. Over this a board covering with $\frac{7}{8}$ -inch holes at the outer edge to allow access to the five shallow extracting-supers. He averages 110 pounds per colony.—*L'Apiculteur*, 135.

GEORGE W. WILLIAMS, p. 321, I don't believe establishing a non-swarming strain of bees is so hopeless as it might seem, even with no control of drones. Please remember that, with full control of queens, by selection you are constantly affecting the drones, making it only a matter of longer time to reach the goal. I believe it's worth your while to try it.

M. E. SEVALL reports, *L'Apiculteur*, 93, that a late swarm was hived in a box, its owner not knowing whence it issued. After eight days, M. Sevall dumped the swarm on the ground, found and caged the queen, and the bees soon arose and went to their old home, where they were kindly received. He does not feel sure a swarm would always be kindly received after so long a time; but the plan of finding the mother colony is good.

"DR. MILLER asks for a safe method, and is told that there is no absolutely sure plan,"

p. 313. Oh! but there is, friend Buchanan, a plan of queen introduction that is *absolutely* sure. I have used it for a valuable queen. Take eight or more frames of hatching brood—no unsealed brood—without a single bee; put it in the hive with the queen, over a strong colony, with wire cloth between, and close bee-tight. In five days set the hive on its own stand, giving very small entrance.

KARL GUENTHER, in his 35 years' experience, has seen hundreds of young queens return from their wedding-flight, and thinks that, under normal conditions, they are not balled on their return. That they were balled upon returning to a small hive with glass walls was what might be expected. The light shining in alarmed the queens so as to set them to running, and then the bees balled them.—*Leipz. Bztg.*, 58. Mr. Pritchard is all right. [Mr. Gunther offers a very reasonable explanation of why the queens were balled in those little glass hives; and in this connection it is some satisfaction to feel that our own experience is backed by the thirty-five years of Mr. Gunther.—ED.]

AN EIGHT-FRAME HIVE is not large enough in the breeding season for an extra-good queen. Neither is a ten-frame hive. A second story must be added; and the two-story eight-frame is better than the two-story ten-frame. As the season advances, an eight-frame hive with abundant super room is large enough. But when fall comes the large hive is much better—for the bees. Of course, the lighter hives and lighter supers are much nicer to handle. All in all, I suspect thousands of eight-frame hives are in use where ten-frame would be better. If only one size is to be made, let it be ten-frame, sure. [You say that the two-story eight-frame is better than the two-story ten-frame. Are you sure about that? We agree with you that a ten-frame hive is not large enough for some good queens. There are times when two eight-frames would not accommodate such queens. We have been slowly coming to the conclusion that, even for the production of comb honey, we should prefer the ten-frame size; and in the case of an extra-prolific queen we would put on an upper story. When she got brood well started in both stories, and it was time for putting on comb-honey supers, we would take off the upper story, crowding the solid frames of brood down into the lower story, and give the other frames to weak colonies. In the meantime we would put on our comb-honey supers, one or two as the strength of the colony might require. With ten frames below filled with brood, the first honey coming in ought to go into the supers. "But," you say, "how about pollen?" Young hatching brood would leave room for the storage of pollen. Or, perhaps better still, we would put on a shallow extracting-super and a comb-honey super. The first mentioned would leave room for storage of pollen. It might be necessary to put a queen-excluder on top of the lower story.—ED.]

Notes from Canada

By R. F. HOLTERMANN

PROSPECTS FOR THE SEASON.

Since my last writing, lots of young bees have appeared in the hives; but I am told that even colonies packed on the summer stands, owing to the wet and cold weather for the last two weeks, have not much brood in the hives, and stores are not any too plentiful. However, I believe the bees have made progress while vegetation has advanced slowly indeed. Three white frosts have visited us (May 3, 4, 5), the heaviest on the 4th. The outlook is still good, and a honey crop is now almost a matter of temperature only.



SPACES OF BEES.

So our good old friend Dr. Miller has joined G. M. Doolittle to the extent of "suspecting" that Doolittle is right when he says, "Six spaces of bees on a frosty morning the first of May is better than more or less." I suppose I am not in it at all, then, when I had to super twelve-frame Langstroth hives on and before April 21. Just the same, I wish Mr. Doolittle lived near me and would make a few exchanges, giving me his colonies with more than six spaces in exchange for six spaces. Can not the difference of opinion upon this subject be laid to management? I doubt very much, where the non-swarming plan is followed out, if bees can be too strong at any time.



LIST OF APIARY INSPECTORS FOR THE PROVINCE OF ONTARIO IN 1910.

1. J. S. Schrank, Port Elgin, Bruce and Huron.
2. D. Chalmers, Poole, Waterloo and Perth.
3. Wm. Idle, Clarksburg, Wellington and Grey.
4. W. A. Chrysler, Chatham, Lambton, Kent, and Essex.
5. John Newton, Thamesford, Middlesex and Elgin.
6. James Armstrong, Cheapside, Norfolk, Haldimand, and Welland.
7. W. Bayless, Grand View, Oxford and Brant.
8. Alex. Robertson, Watertown, Wentworth and Lincoln.
9. Arthur Adamson, Erindale, Halton, Peel, and Dufferin.
10. Hy. Johnson, Craighurst, Simcoe and Muskoka.
11. J. L. Byer, Mount Joy, Ontario, York, Victoria, and Durham.
12. W. Scott, Wooler, Peterboro, Northumberland, Hastings, and Prince Edward.
13. J. B. Checkley, Linden Bank, Lennox and Addington, Frontenac and Leeds.
14. A. A. Ferrier, Renfrew, Renfrew, Lanark, and Carleton.
15. Alex. Dickson, Lancaster, Russell, Prescott, and Glengarry.
16. Homer Burke, Tayside, Greenville, Dundas, Stormont.



IS THERE A "BEST BEE"?

There are so many things that D. M. Macdonald writes that I agree with and consider excellent that I hesitate to comment upon his article on p. 296, May 1, especially as he is a ready lance with his pen.

More than that, owing to some slip I was recently made to say that he was becoming well known as an apicultural writer when I intended to add *on this continent*, as he is already well known in Europe. In defending the black bees against the charge of not defending themselves as well against the moth, he justly points out that, with strong colonies, the wax-moth need never be feared. True; but I have had hundreds and hundreds of instances where, in the same apiary, in strong colonies, the wax-moth larvæ could be found sometimes half a dozen in a black colony. Such instances are rare in Italian colonies. Yes, in this country one can readily find eight or ten larvæ of the moth in a black colony where one would be found in an Italian. This being the case, there must be a point where the black stock succumbs to the moth when the Italian does not. More reason would lead me to believe that the black bee must be less vigilant at the hive entrance when other enemies approach; and experience bears out my reasoning. As to susceptibility to foul brood, I can not prove any difference. In case of what is called American foul brood I doubt if there is any difference; but I find much more dead brood in colonies headed by black queens than with Italian or Carniolan. I say "Carniolan," because we in Canada do not refer to them when we use the term *black bees*. The Carniolan and black bee have characteristics as distinct as the Italian and black; and if any one doubts this statement, let me say, "Your Carniolan bees have little or no Carniolan blood in them."



*UNTIMELY BREEDING.

Mr. Macdonald commends black bees for "not breeding untimely." As I understand that term, when comparing Italians and Carniolans with blacks, this is a virtue I have never been able to appreciate in black bees. If bees have been brooding until April 20, they are packed so that brood will not chill, even if the hives are not protected beyond a warm cover and proper entrance. When it rains, and perhaps a few chilly days come, for two weeks, the blacks stop brood-rearing while the Italian and Carniolan bees go on. I like that kind of *untimely brooding*. This untimely brooding of Italians and Carniolans gives me a lot of comfort during the present weather, during a break in a honey-flow—yes, after the last flow and until cold nights come on. The young bees are the heart and soul of a colony at all times. Mr. Macdonald quotes Quinby, "I can often avert a black bee in time to prevent a sting; but he must be a skillful swordsman who would thus parry the lightning thrust of the Italian." Admitting the trait, it just shows the strong, vigile, and active character of the Italian. Something can be said for black bees. They have some traits superior to Italians; but give me the medium yellow-colored Italians in preference to the blacks.

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

THE SECTION-DAMPENER.

The editor says, page 293, May 1, that he would not think the water would pass through more than one row of sections. The fact is, the water runs clear through on to the floor and dampens every groove if warm water is used.

CONCERNING THE RETAILER.

Mr. Diener, page 249, April 15, takes exception to some of my statements on page 105, Feb. 15. I do not think the retailer is responsible for high prices altogether; but I do think that the retail business is overdone, which makes it necessary for him to make a higher percentage of profit than if a larger business were done. I certainly do not think the retailer is making any more money than he should; but the small amount of business done makes it necessary to charge a higher percentage of profit.

BEE-KEEPING ON THE "DIVIDE."

We have all thought here in the West that honey in quantities could be had only in the irrigated valleys; but bees get considerable nectar from the wild flowers on the prairie. Some of the "dry" farmers are keeping a few colonies, and are succeeding with them. The bees on the "divide" between Denver and Colorado Springs often make as much honey as do those in the irrigated districts. The divide has a heavier rainfall than most parts of the West, and the wild flowers are very abundant. Many a mountain valley and apparently barren field has surprised the bee-man who showed faith by keeping bees in these districts that are passed over by the general run of bee-keepers. The honey gathered from the Western wild flowers is darker than alfalfa, but it finds ready sale among many people who prefer it to the alfalfa honey.

AN EARLY SPRING.

Spring came much earlier than usual this year; and unless we have some cool weather to discourage breeding, bees are going to swarm much earlier than usual. The abundance of wild flowers, dandelions, white clover, etc., will be quite a factor in early swarming. If we have abundant showers these flowers will come out in profusion, and the stimulus given the bees will bring swarming within a few days after alfalfa blooms. If our bees get the swarming fever at the opening of the alfalfa bloom we certainly shall have a time controlling it. The outlook now is that we shall have a swarming year. There will be honey, no doubt; but if the bees act the way they have in some previous years we bee-keepers will have a busy time

persuading the bees to live in a sensible number of hives. The wild flowers on the mountains and along the edge of the foothills have been more abundant than ever, so far, and the bees in these places have swarmed already, some few being reported in April.

LIQUEFYING CANDIED COMB HONEY.

The test given in melting comb honey, page 278, May 1, is valuable to western bee-keepers; but I think it would have come out better if the temperature had been kept between 65 and 75 degrees. This temperature would hardly discolor the honey. However, it would not melt any honey already candied, but would largely prevent further granulation. I melted some candied comb honey, and the color was darkened. The most noticeable feature was the toughness of the comb. It was waxy, and not delicate and crisp, as the comb was before melting. The temperature was between 100 and 105 degrees. Most of the combs sagged a little; a few melted down altogether.

The opinion of all Easterners is that alfalfa honey is worse for candying than any other honey. This may be true; but it is a fact that honey gathered entirely from alfalfa, when weather conditions are favorable for its thorough evaporation, is not liable to candy for over a year. I have seen snow-white alfalfa comb honey heavy in body that did not granulate for two years.

It is not difficult to tell the honey that will granulate from that which will "stand up" for a long time.

Comb honey built during an intermittent flow will candy quite soon. It is light amber or amber in color, and is thinner in body than honey gathered in a continuous flow. Comb honey of a clear white transparency, and heavy in body, may be safely stored away for sale in the spring, as it will remain clear if not subjected to great changes in temperature.

Bees Gather Honey from Common Field Peas, but they do Not Get it from the Blossoms.

I heard that bees worked only on the stalks of the field peas where the blossoms drop off, so three years ago I made some observations; and in every case I found that not a bee worked on the blossom. They were working at the point where it dropped off, pod and all. A sweet substance is secreted here, and the bees worked on this. I wondered if there was any nectar inside the blossoms; so I pulled quite a number apart, and in every instance I found that the little pod was just bathed in nectar, although the bees did not notice it nor seem to know how to get at it.

Last summer I had near the house a small patch of peas that was covered with bees from morning till night, so I made some more observations. Nearly all of them were working on the stalks as usual; but here and there I saw a few Italians pushing their tongues down into the blossoms, as the blossoms are not closed the entire length on the upper side. I intended to go back with some flour and mark the bees that were working on the blossoms, and note the hive that they came from, in order to raise some queens from this strain, but neglected to do so. I believe if we could raise bees that would work on the blossoms it would make quite a difference in the yield of honey here. I have never noticed any pollen from the field peas.

Fremont, Mo.

MRS. ALMEDA ELLIS.

Conversations with Doolittle

At Borodino

EMPTY COMBS AS FEEDERS.

"It is only an occasional season that it seems to pay me to feed. I live where bass-wood is about the only surplus I can count on; and after apple-bloom there is little the bees can get between; and when they fail to secure enough to keep brood-rearing prosperous through June I believe it pays to feed. I did not want to go to the expense of buying feeders, so I thought I would fill a lot of empty combs I have with syrup; but on trying to do so I failed to get much into the cells. Can you tell me how it is done?"

"If you lay an empty comb flat and pour liquid on it, instead of the liquid running into the cells, as you would think it would do, it simply stays on the surface or runs off at the sides, very little entering any of the cells. But should you hold the liquid three or four feet above the comb you will succeed better than by pouring it on in the most natural way, with the vessel containing it near the comb. But even at the height of four feet, if a portion of the syrup falls in a compact mass it will not enter the cells, as it can do this only by forcing the air out. Where the syrup presses with equal force over all parts of the mouth of any one cell there is no chance for the air to get out, and the cell remains empty. The drop or stream of syrup must be smaller than the inside of the cell in order to enter it readily, therefore the smaller the drops we can have, the better our success. To this end, if we take, instead of a dipper, the watering-pot we use in the garden during a drouth, fill it with syrup, and hold it up from the combs three or four feet we shall be able to fill most of the cells as we desire. Syrup as thick as we often want to use for feeding will not readily pass through the rose of a watering-pot unless hot; and if hot enough so it becomes thin it will melt the combs so as to destroy our feeders. But we can use "one-to-two" syrup as warm as 110 degrees without danger to the combs, and this will be just the right heat to be comfortable to work with.

If you do not have more than ten or fifteen combs to fill, lay one of these flat down in the bottom of a large dish-pan or wash-boiler. Hold the watering-pot, filled with 110-degree syrup, a few feet above the comb, trembling the rose a little as you pour, so that not all strikes in the same place. As soon as one side is filled, turn the comb over and fill the other side in the same way. In this way keep on till your combs are all filled. If syrup accumulates in the bottom of the boiler, pour it back into the watering-pot, being careful that you do not spill any outside the dishes you are using, and thus make a muss sufficient to make you wish you had procured feeders different from frames of comb."

"But these combs, when filled, make feeding easy by setting them in colonies lacking stores, do they not?"

"Yes. I have thousands of such, and consider this the very best way to feed unless I can have frames of sealed honey to set in, instead of these frames filled with syrup."

"But how about the drip?"

"By setting empty hives over a wash-tub, and hanging the frames in these as fast as filled, the tub will catch all drip so it can be saved."

"But I wish to use several hundred of these combs of syrup. I judge the watering-pot is too slow for so many."

"Years ago I used a tin pan the size of one of my frames, and four inches deep. In the bottom of this I punched holes (from the inside) about the size of those in a rose used for garden-watering. These were in rows $\frac{3}{4}$ inch apart, and the holes $\frac{1}{2}$ inch apart in the rows. This dish was set on two strips which were fastened to the top of a bench four feet high, the strips jutting out from the bench so that the dish rested on them at each side, and came out over the floor below, sufficiently so that a large wash-tub could be set underneath. On the bench, a honey-extractor can was installed, so that the gate was over this pan, punched full of holes as I have described. This can, minus the extractor-reel, was filled with syrup of proper temperature, a wire-cloth herb-strainer being fastened to the faucet, so that the holes in the pan would not be clogged by any foreign substance which might get into the syrup. Some sheets of tin were fastened on a trough made of boards set on a little incline, the lower end of which came so that all drip would run into the washtub, and over this trough were set hives to take the frames of comb as fast as filled. With the needed assistant, all was ready. I sat on a stool by the wash-tub, with rolled-up sleeves so I could hold the frames of comb near the bottom of the tub. The assistant opened the faucet just enough so that the syrup would run from each hole in the dish, when, by moving the frame about a little from side to side, the cells were all filled instantaneously, the frame turned over, and the other side filled as quickly. The assistant then handed me another empty comb, taking the filled one and hanging it in one of the hives standing on the trough, carrying it along over the trough and hives so no drip would get on the floor. In this way I would have the frames filled as fast as he could hand them to me, and put the filled ones in the hives, often filling over 100 an hour. The drip, and whatever fell into the tub, was emptied into the extractor-can as often as necessary, the strainer catching all particles of comb or dirt that accumulated, so that with this and the necessary feed the can was kept full as long as we had empty combs; the cost of all feeders saved, and the feed put right in the hive among the bees just where I wished it, with no danger of robbing in times of the greatest nectar famine by setting in these filled combs in the twilight."

General Correspondence

EXTRACTING DURING THE HONEY-FLOWS.

Stacking up Supers vs. Extracting Frequently During the Flow.

BY G. C. GREINER.

Fortunately the number of bee-keepers who extract honey before it is at all capped is growing smaller—many of the prominent producers even going so far at present as to do no extracting until the end of the season, stacking up the supers four and five high. The writer of this article represents the majority, probably, who, during the flow, extract all combs that are nearly capped over.—Ed.]

The question which I am frequently asked, "Would you advise me to produce comb or extracted honey?" must be decided by every bee-keeper according to his natural inclination and surrounding conditions. The main point that should decide the matter is our outlet or demand. If we have a ready market, and are fortunate enough to live in a locality that produces a fair grade of honey, the production of extracted honey is certainly advisable.

But, above all things, nothing but a prime article should ever be taken or sent to the market. The importance of this point is nicely brought out by Mr. Townsend in his "Two-can article," published in the *American Bee Journal* a short time ago. I fully agree with Mr. T. that a poor article will ruin our trade; but I have to differ with him on the management of producing a prime grade. My methods are so different from Mr. T.'s, with some important advantages thrown in, that a brief description of my *modus operandi* may be a help to others who are situated as I am. But before making the attempt I will make a few general remarks, lest Mr. T. and his adherents may get scared.

For years I have practiced extracting during the honey season, commencing when my combs are capped three-quarters or over. Of course, I do not suppose that all my combs are in just that stage of progress. I may find some that are all capped, and occasionally one not quite three-quarters; but if such a one comes in rotation with the lot to be extracted, it goes into the extractor just the same.

I sell at least nine-tenths of all my crop direct to the consumer, which brings me in close contact with that class of people who actually use and test my honey; and if it did not give entire satisfaction, I would be very apt to hear about it. But, instead, I have, during the last eight or ten years, built up a honey trade, with a reputation for extra-fine honey, that any honey-producer might be proud of. In a sense, I am a professional honey-producer—that is, I depend on the product of my bees almost exclusively for my daily bread and butter, and

I expect to do so just as long as Providence permits. This being the case it would be very poor policy to produce an article that would spoil my own market.

Several reasons induce and compel me to extract early. First, if I should leave my honey on the hive until after the honey season, as Mr. T. advises us to do, it would be next to impossible to extract it. It would become so thick and heavy that a good portion of it would adhere to the comb and be lost as surplus. When I extracted last summer, early as it was, with now and then little patches of open honey, I had to do quite a little cranking to throw it out of the combs, and after it was out it was very slow to run out of the two-inch honey-gate of the extractor.

Second, my customers are always anxious to get some of my first honey. Whenever I am in the city during spring or early summer, my customers frequently hail me on the street: "When will you bring some of your honey to the market?" or, "Haven't you any honey to sell yet?" or, "Bring me some of your first honey you have to sell," etc. These are expressions I hear time and again. If I should wait until fall before I extracted, my customers would lose their patience and supply themselves from some other source, and I would lose my trade. As it is, a large share of my crop is sold, and the money in my pocket, before Mr. T. even thinks of extracting.

Third, I believe the use of one extracting-super, instead of tiering up, increases my honey crop. The constant changing and shifting of combs, which is necessary with my management, seems to have an energy-producing effect on my bees. The shaking-energy-into-bees theory, which some of our friends advocate, seems to find here practical application. On the other hand, if the forces of a colony are scattered through three or four sets of extracting-combs, empty or filled, idly taking care of uselessly spread-out premises, how can they be gathering and ripening honey? They can not do as effective work as when all forces are concentrated in one super close to the brood-nest.

It may be well enough to say a few words about my appliances, and why I use them. As I am a strong advocate of perfect uniformity in every thing where possible, I use the Jumbo frame, both in brood-chamber and extracting-super. I am thereby enabled to change frames back and forth. It is sometimes very desirable to move combs of brood from the brood-chamber to the super, and at other times combs of honey in the opposite way. It is the same with the super and the brood-chamber. At a minute's notice one can be used for the other. By simply hooking or unhooking the bottom, as the case may be, one is the other whenever desirable.

Then I use to each hive one extracting-super only. I am partly compelled to do so. My physical condition, as a consequence of advanced age, prevents me from

practicing the tiering-up plan. One of my supers, when ready to raise, weighs between 75 and 80 lbs., which is more than I care to handle right along. I am, therefore, compelled to remove my crop by the single comb.

Another item that should be taken into consideration is the additional expense of getting stocked up. It would require quite an amount to furnish the necessary outfit for the season's crop if left on the hives until fall, besides the handling and taking care of so much more paraphernalia.

In brief, I manage my extracting in the following way: As soon as the season is far enough advanced to show signs of incoming honey, all better swarms are supplied with their supers. This generally takes place during fruit bloom, about the 20th or 25th of May. When the white-clover flow begins, or a little before, all the rest that promise fairly well are also supplied to make sure that all have room for storage. As the flow advances, and the strong and best-working colonies are filling up, I take from two to four of their heaviest combs and exchange for empty ones from the weaker colonies that have not started yet. The bees that adhere to these full combs, I try to shake in front of their hives; but I am not very particular if a few bees are left on the combs.

Two or three days after the first exchange was made, the inserted combs in those strong colonies are probably full again, and need exchanging a second time. When this is done, all the bees are left on the combs taken from colonies that are overly strong, and exchanged for empty ones of the weakest swarms. In this way I hit two birds with one stone—I control swarming with one lot and build up another to proper working condition.

About this time I have no more empty combs in weak colonies to draw from, nor storage for full ones over weak colonies. All need their empty combs for their own use, and the extractor has to be called into requisition to help out. The combs that were not exchanged, but were left in the strong colonies from the opening of the season, are now more or less capped, and have to be extracted to provide storage where needed.

With a comb-basket full of empty combs I go to the first hive that needs more room and exchange all the combs of honey, fit to be extracted, for empty ones. The full ones are taken to the honey-house, and extracted, after which they are taken to the next hive that needs more room, and exchanged as before. In that way all crowded supers are relieved of their overplus.

When the comb-baskets of the extractor begin to drag in the honey, the latter is drawn off and emptied into taps. No strainer is used at any time. It is not necessary with my management.

The next round, two or three days later, brings the whole yard to that state of perfection which I consider ideal in every respect. Every super has sufficient storage to accommodate the incoming nectar, which

controls swarming; and every super, with, perhaps, the exception of a very few of the weakest that have not caught up yet, has honey ready for the extractor, and that enables me to extract whenever I desire to do so.

In the honey-house, conditions are as favorable for the progress of my work as they are outdoors. By the time my tanks are full, or nearly full, the first one has clarified itself and is ready to be drawn off into retail packages. Thus I always have storage for the honey from the extractor, and honey ready to be canned.

During the rush of the honey-flow I make it a point to extract daily, but only during the middle or warmest part of the day. Mornings and evenings I spend my otherwise leisure hours canning. Cleaning, labeling, and filling cans keeps me busy. It takes me about three days to make the circuit; and when the flow is at its best I can begin again at one end when I am done at the other.

In giving the foregoing outline of producing extracted honey, as I practice it, I am well aware that the same management would not suit everybody, nor could it be followed by everybody else; but it is the plan that is best adapted to my own conditions, and I can say I have been quite successful in the past.

La Salle, N. Y.

THE STARVATION PLAN OF CURING FOUL BROOD.

The Infection of the Hive; the Quinby-Jones Plan.

BY G. W. BARGE.

In the summer of 1905 I discovered foul brood in my home apiary as well as in the outyards where my bees were out on shares; and when Mr. France came here he advised using the McEvoy treatment, which we did, but it did not prove entirely successful with us, as the disease appeared again in some hives. We accordingly treated it the next spring. We also tried the Alexander method, with no better results, and, after thinking the matter over, we came to the conclusion that the only way in which the disease spreads is through the diseased honey, so we decided to try a method of our own, which is as follows, and with which we have had complete success.

First, remove the queen; and if she is a good one which you wish to save, put her into a nucleus. After fifteen days look through the hive for queen-cells and destroy all but one to prevent swarming. Wait at least twenty-one days after removing the old queen, as by that time the healthy brood will all be hatched; then take an empty hive, cover the top with wire screen, nail the bottom-board on tight, leaving only the entrance open. Set the hive containing the foul brood a little to one side and put the

empty one with screen cover in the place of it. Shake the bees from the old hive out in front of the entrance of the hive covered with screen. Handle them as quietly as possible, for, the more quiet they are, the less honey they will take with them into the new hive. Lay a sheet of heavy paper in front of the entrance to catch any honey which may drip from the combs when shaking the bees from the frames. (This can then be burned after you are through with it.) It is better to do the shaking in the evening; but we have done the work during the day by using one of the Root hive-tents.

After the bees are all in the new hive, close the entrance and carry them into the cellar or a dark room. I prefer the cellar, as it is cooler, and they will consume the honey which they have carried with them much sooner. Leave them there at least thirty-six hours; then take another hive with good clean combs (I have used full sheets of foundation by giving one frame of brood). Put the new hive on the old stand from which the bees were taken; bring the bees from the cellar, preferably in the evening, and shake them in front of the hive with the combs. The next day examine them to see if they have a queen. If not, always have one ready to give them; but nine times out of ten they will have raised a queen before going into the cellar.

It is surprising how they will go to work after they are brought from the cellar and put into the new hive, and how quickly they will build up. We have had swarms treated in this way during the latter part of May from which we have taken 50 lbs. of extracted honey in the fall, and have never yet found any traces of foul brood in colonies so treated. I call this the starvation plan, and will guarantee it to work everywhere and every time.

In case the swarms to be treated are very weak we take them to a strange yard after removing the queens, and unite two or even three of them by piling up the hives with screens between them and cutting a small entrance in the wooden frame of each screen. After twenty-four hours the screens may be removed, when the bees will all go together without fighting. If there is any honey in the old hive from which the bees were first taken, extract it, then boil it thoroughly, after which it can be mixed with sugar syrup, and fed to the bees when needed. I have fed this honey in the fall for winter stores, and have never found any trace of disease in colonies so fed. Melt the old combs and have the wax made into comb foundation to replace them. Take the covers and bottom-boards off the old hives and nail a strip of wood across the top to hold the frames in; place them in a tank of hot water and boil them. Two minutes of hard boiling is sufficient. After the hives are boiled, put in the covers and bottom-boards and boil them, when all will again be ready for use. We like this plan better than boiling the frames and burning out the hives as given in Scholl's method on page 77, Feb. 1, as in

this way it can all be done at once, and the hives are not charred and dirty inside as when burned. After all is finished you are at no expense except your time, as the extra wax will more than pay for the making of the foundation.

Union Center, Wis.

[The plan here described is practically the same as that advocated by Moses Quinby in the first volume of his book, in 1853. Mr. D. A. Jones, of Canada, some thirty years later, got out a booklet in which he described what he called the "starvation plan." He confined his bees, without brood or combs, in a dark cool place until they had consumed all the honey in their sacs, then let them loose on foundation. But the objection to this starvation plan has been this; It reduces the vitality of the bees. In order to build comb bees ought to be well fed. Indeed, they ought to be fat. To starve them down gives them a bad setback. Experience has shown that bees put on foundation will generally use up all the honey in their sacs in drawing the foundation out into comb, especially if they are made to build comb from foundation twice.

But if foul-broody bees are to be let loose on clean dry comb, they should be starved as recommended by our correspondent, and ought to be starved long enough to use up every particle of the honey in their sacs.—
ED.]

THE ALEXANDER PLAN OF BUILDING UP WEAK COLONIES.

Some Practical and Timely Manipulations; Alexander's Ideas Sound.

BY WM. L. COUPER.

The discussion relative to the Alexander method of curing foul brood should serve to remind us how much bee-keeping lore we owe to the late veteran of apiculture. Speaking personally, my entire system of management has been changed by his writings, though I have frequently varied his plans somewhat to suit my own methods.

I think the first Alexander plan that I tried was his method of building up a weak colony by placing it on top of a very strong one with an excluder between. The first year I tried this it proved a failure with me, though I endeavored to follow his directions exactly. Since then I have employed it continually and most successfully, and I fancy my first failure must have been due to a failure to realize what Mr. A. meant by "a very strong colony." I notice that a good many bee-keepers find it necessary to place either paper or wire screen between the colonies at first. I have never taken any precautions of the kind, and have yet to see the first fight; but my bees are all Italians. About an hour before sundown I remove the cover of the strong colony, replacing it with an excluder. Two hours later I place the weak colony on top, and the job is done.

While this is far the most successful way of building up weak colonies in spring it has some objections. One is that, in dividing the hives after they are both strong, the one that is moved away loses its field bees almost entirely. Another is that bees strongly object to carrying pollen through an excluder, and the combs of the lower hive get choked with it.

THE ALEXANDER PLAN FOR MAKING INCREASE.

At one time I used the Alexander plan of making increase throughout almost the entire apiary. I have largely given it up now, partly because I don't want to increase, and partly for other reasons. In case anybody does not know this plan I may say it consists in leaving one frame of brood and the queen in the lower story, and filling up with empty combs or foundation, the other frames of brood being placed above an excluder on top. Queen-cells in the top hive are destroyed in six days, and the tenth day the upper story is moved to a new stand and given a ripe queen-cell—better, a virgin queen; or, best, a laying queen. To beginners who desire to adopt this plan I would offer two suggestions: Do not attempt it unless there is a fair, steady honey-flow, especially if you employ foundation instead of combs. As a rule, the plan will work better if you have two frames of brood below with the queen instead of one. While I do not use this method now for increasing, I do employ it in a modified form for making and building up nuclei and other purposes.

NEVER INTRODUCE A QUEEN TO A FULL COLONY.

There was one remark of Mr. Alexander's that I do not think ever received the attention it deserved. It was to the effect that it is always bad policy to introduce a queen to a full colony, for, though she might be accepted at the time, she would very likely be superseded very shortly. If this is the case, and from my own observation I think it very frequently is, should not queen-breeders advise introduction to nuclei?

SWARM PREVENTION.

The questions of swarm control and the successful introduction of queens are brought up regularly every season in the bee-journals; so, perhaps, my methods may be of some interest. My swarm-prevention method I discovered by chance. So far it has been successful; but I have not tried it long enough nor on a sufficiently large scale to guarantee it. Give a second story filled with combs as soon as the hive is full of brood, and let the queen have the run of both stories, till shortly before the honey-flow. Then insert a queen-excluder, leaving the queen above. In ten days put her below again. If running for comb honey, remove the top hive in a day or two, and replace with a super (the brood in the top hive may be used to build up weak colonies). I have never found colonies treated like this swarm; but take note that the queen must be left in the top story, as this is important.

Bees do not, in my experience, build queen-cells below an excluder with a queen above, but the reverse way they often will.

Cannington Manor, Sask., Canada.

[It is becoming more and more apparent that Mr. Alexander's teachings stand the test of time when we take into consideration his environment. For thirty years he was almost unknown to the public, and yet one of the most successful bee-keepers in New York. During his latter days he began to write. He had nothing to take back, because his earlier experiences were not down in black and white; and, however much his views may have been modified during his thirty years of actual work, we secured what we may call the final conclusions of his ripest and best experience. Mr. Couper, our correspondent, is not the only one who has been so enthusiastic over the benefits derived from the late Mr. Alexander.

We are pleased to note that Mr. Couper's method of swarm prevention is very similar to one that we used and advocated some years ago. We are prepared to believe it is all right, not that we were the first to give it to the public, but because we had seen it and tested something like it.—ED.]

THE LAYING WORKER A RARA AVIS.

Are Workers that Lay as Common as Many Suppose? is Not an Undersized Queen Nearly Always to Blame?

BY ALLEN LATHAM.

To keep bees for twenty-five years, and during that period make a most careful study of their habits; to have the experience which all that entails, and never see a laying worker—well, that raises a question. Scarcely a copy of GLEANINGS comes to hand without some reference to these pests (?), and nearly every mention accompanied by a cure; and the question looms up greater than ever. It loomed so big that I even ventured to state to a friend that I was going to write GLEANINGS and deny the existence of such a thing as a laying worker. The friend, however, checked my enthusiasm thoroughly by stating that he had had lots of laying workers, and that he had even seen the varmints back into a cell and leave eggs.

Once, some twenty years ago, I had what I called a case of laying workers. I called it so because all the signs were there—only drone brood or no brood at all; numerous eggs in cells, and no queen to be found. Since then I have many times found all these symptoms except one, and that one has been persistently absent because a queen was in each case persistently *present*.

During the last twenty years every summer has furnished numerous cases of colonies, full or nuclei, going queenless. These cases have invariably divided themselves

under two heads—either absolutely queenless or temporarily queenless, the succeeding queen to remain a virgin.

Of the colonies under the first head, colonies have gone queenless in late fall or early winter, and colonies have gone queenless in late spring or early summer. The result has always been the same—no eggs, no brood. No matter how long such colonies were left, in no case have eggs appeared. All colonies showing eggs came under the second head, and every one had a queen.

Why, with so many chances for laying workers to set up their rule, have none ever appeared in these colonies? Is there any answer other than the title which heads this small article—the laying worker is a *rara avis*?

One is led to think that, in all probability, the vast majority of cases of so-called laying workers are cases of undersized virgin queens. That one painstaking observer should not find a true case in twenty years, though he had scores, if not hundreds, of apparent cases, should not be considered a circumstance to be lightly passed over. The actual finding of worthless queens is better evidence than the failure to find any queen.

During the past summer I had one or two rather annoying cases. For a time I began to suspect that no queen was present. It was only after persistent search, a search which called into play all my skill, that I eventually in each case spotted the insignificant queen. The removal of each queen was followed by an easy introduction of a good queen.

Though I do not deny the existence of laying workers, I am forced to think that they have been given credit for being much more common than they are, and for being, in consequence, of much greater importance than they are. I firmly believe that more careful search will, in the majority of cases of laying workers, reveal what the bees recognize as a queen, but what is easily overlooked by the bee-keeper because she has not every attribute of a queen.

Much greater care must be exercised in the search for this queen than in the search for a normal queen. Queen and bees both fail to act in a perfectly normal manner. The queen is more inclined to hide than is the sound queen, and the workers are less inclined to indicate to the bee-keeper the locality of the queen. Though the queen is recognized as a queen, she gets little homage.

The best way to find such a queen is to proceed as follows: Open the hive gently, and quietly remove combs from both sides. Before removing any combs it is also well to lay a strip of cloth lengthwise over the combs containing the eggs and brood. Continue to remove combs from each side till only two are left. If careful selection has been made, these two will, in the vast majority of instances, hold the queen. Now split these two combs apart with a quick motion, and give a rapid glance over their inner surfaces. If the queen is not seen inside of ten seconds, replace these two combs; but either

leave the others outside, or, if placed in hive, leave them two or three bee-spaces away from the central two. In about fifteen minutes take another look between those inner combs.

Do not look for a plump queen which moves majestically about the frame, nor one which slides with folded wings quietly under the bees. Look rather for a nervous bee with wings partly outspread, a bee somewhat larger than a worker, but with actions unlike those of a worker. When one knows what to look for, these small flighty queens are nearly as easy to find as are the normal queens.

One strong argument in favor of the belief that laying workers are of rare occurrence lies in the fact that nearly every remedy, if not all, will as certainly get rid of such a queen as I have described. The queen is never found, and this is usually accepted as sufficient evidence that there existed a bona-fide case of laying workers.

It has been suggested that laying workers are evidence of Cyprian blood. As the writer has been in the habit of sticking to bees with a goodly percentage of black blood, his failure to find laying workers may be thus easily explained. It might be worth while to gather more complete data along this line. If there are apiarists who have had laying workers of other than Cyprian or Golden stock, why not hear from them? But let proof be offered. Failure to find a queen is no proof at all. Some of these little queens go through excluder zinc quicker than you can say Jack Robinson. The only satisfactory proof is to catch a worker in the act of laying an egg. One can divide a colony of supposed laying workers; and if eggs continue to appear in *both* portions, this is fair proof.

Norwich, Conn.

[While we believe laying-workers are uncommon we are sorry we can not agree with our correspondent on another point. There is a wide difference between the work of dwarf or scrub queens and that of laying workers. In a well-regulated apiary, especially where its owner keeps up with the times, laying workers, or the evidence of their work, is very rarely found. In fact, we are almost inclined to think that almost any one who allows such pests to develop among his bees is not much of a bee-keeper. One of two things is true—he is either careless or ignorant.]

Every queen-breeder is very familiar with these scrub or dwarf queens. Some of them are so small that they are very difficult to find. They are not a rare bird in a large queen-rearing yard. But one thing is sure—it is quite impossible to introduce a queen, laying or virgin, to a colony having one of these worker-like queens. On the other hand, it is quite possible to introduce a laying queen or virgin in a hive of laying workers. To give a ripe cell is the usual remedy for the nuisance. We never, in all our experience (and we have raised thousands of queens) seen a case where a scrub queen

would scatter eggs like a laying worker unless she were somewhat cramped for egg-laying room.

The very fact that Mr. Latham, a progressive bee-keeper, has not found laying workers among his bees is not at all strange. He ought not to find them. Most strains of bees can be queenless a considerable length of time without developing laying workers. We will venture to say if he or any one should attempt to produce them by making a hive long queenless he would be disappointed. He might succeed with the Eastern races. It is very seldom that we have laying workers in any of our yards; and when they do show up we are sorry to confess it is in the case of a yard that has been neglected. We have, around Medina, in our various yards anywhere from four hundred to six hundred colonies. Among all these bees we do not have a hive of laying workers once in three years, notwithstanding that some hives will be long queenless some time in the spring when the demand for queens is heavy and it is too early to give cells or virgins; but scrub queens from some insignificant cell that escapes scrutiny are not uncommon. Such queens make all kinds of trouble until they are located and their heads pinched. If Mr. Latham keeps only a limited number of colonies it would not be surprising if he should not find a case of laying workers in thirty years.—ED.]

COMB AND EXTRACTING SUPERS ON THE SAME HIVE.

A Plan for Preventing Swarming, and Inducing the Bees to Enter Comb-honey Supers Readily.

BY JAY SMITH.

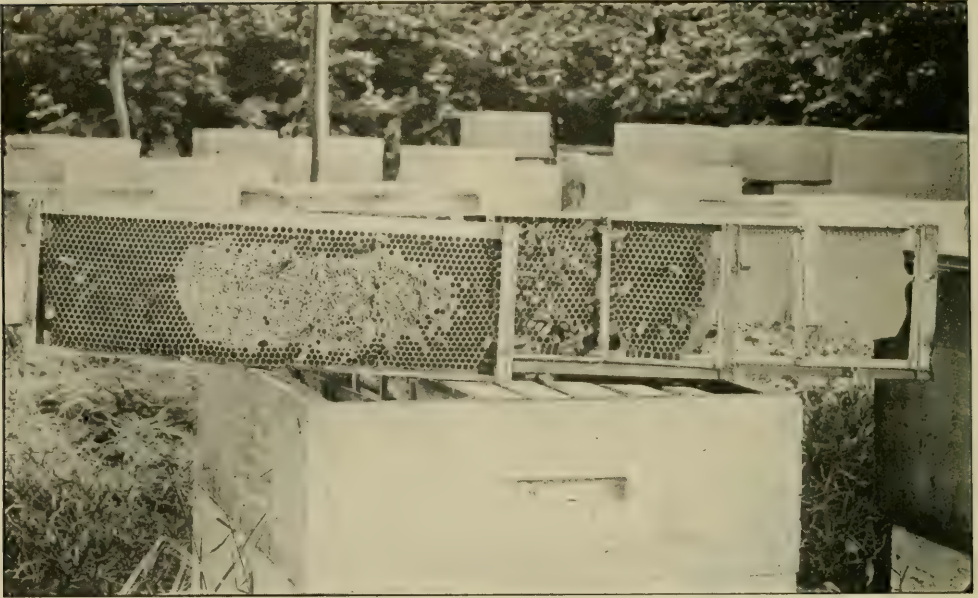
The question is frequently asked, "What is the best-sized hive for comb honey?" The answer has usually been that the eight-frame L. hive or the ten-frame Danzenbaker is recognized as the proper size. Others contend that these hives are too small for a prolific queen to lay to her full capacity and yet have room in the hive for ten or fifteen pounds of honey and a frame of pollen which are necessary for the best results. Now, both of the above claims are entirely correct; but it will be seen that, if the same size of hive is used for brood-rearing and for comb-honey production, you can not have the advantages of both the large and small hive. I wish to state here that the person who uses one size of hive for both purposes is not getting out of his bees what he should.

Some time ago I described in GLEANINGS how I used two hive-bodies for brood-rearing and then reduced to one for the honey-flow. This system was good; and when it came to getting a host of bees on deck at the critical moment it worked to perfection. But it had several drawbacks when running on a large scale. When it came time to put on supers it was a job to open hives and put all brood in one body. And then some of the hives I took off had brood in them. This had to be looked after. Then a lot of the honey in these extra bodies was unsealed honey. This had to be put on a hive or it would have soured.

The system I have used for two years back has all the advantages of the above, and none of its disadvantages. Instead of using two full hive-bodies I use one Danzenbaker hive and a shallow super filled with extracting-combs. When raising brood before the honey-flow this super is on the hive, and the queen has full sway, and can lay in the hive-body or upstairs as her royal highness wills. Now, the swarming season comes on just after the flow starts; and unless one has plenty of room for the queen to lay, as well as room for honey, swarming will be the result. But leave this on shallow extracting-supers till the bees are busy gathering, and then raise it up and put the comb-honey super on between the extract-



ONE OF JAY SMITH'S HIVES, SHOWING EXTRACTING-COMBS AT THE SIDE OF THE SUPER, A LA TOWNSEND.



THEY WORK WELL STARTED IN THE EXTRACTING-COMBS AT THE SIDE OF THE COMB-HONEY SUPER.

Note that the row of sections just back of the extracting-frame is also well along, and that the second row back is started.

ing-super and hive. As will be seen, this gives more room right in the middle of the brood-nest; and instead of cramping the bees, and forcing them into the supers and forcing swarming when the super is added, it really gives more room and checks swarming. The bees will at once begin drawing out the foundation; and as soon as this is nicely begun, the comb-honey super should be brought on top of the extracting-super, or there will likely be pollen and possibly brood in the sections. After this is done, a queen-excluder should be put next to the hive-body or the queen will again occupy the extracting-super. In a short time all the brood will be hatched in the extracting-super, and it will be filled with honey, and capped. It should then be removed and extracted. The comb-honey super will have work well advanced, and this is then placed next to the hive, where it will be finished in a hurry without any lightweight sections.

As soon as the flow is over, the empty extracting-super is placed on the hive again, and the queen at once fills it with eggs. If the prospect is good for a fall flow, the above plan is again carried out. If not, they are left just as they are all winter. The super is filled with dark honey, and the bees arrange their nest for winter. They usually form their cluster so that the space between the super and hive-body comes right in the center of the cluster. This gives them the best of communication with each other all winter. They also have a lot of honey so they will not be stingy with it when they need it for brood-rearing in the spring.

I see some writers think that bees rear brood just the same whether they have one pound of honey ahead or twenty-five. It seems strange to me that they would accuse the bee, that is considered the most intelligent of all insects, of raising a lot of young bees to use up the last drop of honey and then starve to death! I know from experience that they very carefully keep account of the stores ahead, and raise brood accordingly; and with plenty of comb space and honey it is surprising what they will do in the way of bringing a lot of bees on the scene just when they are needed.

I wish to protest against another statement that has been made several times, although I can not recall when. Several have said that if one extracts from black brood-combs the honey will not be as white as from new white combs. My experience proves to me that there is no ground for that statement. I will give one of my experiments. I picked out ten of the blackest brood-combs that I could find, extracted the honey, and put it in glass jars. Then I thoroughly cleaned the extractor, and extracted from ten new combs as white as snow. I set these jars with the others; and when I went to compare them I was unable to pick the last ones out of the lot. I compared the color and tasted of the honey, but could see no difference.

I have been using Mr. Townsend's plan of putting extracting-combs at the outside of the sections, and feel that in this Mr. Townsend has given the bee fraternity a most valuable kink. In the engraving will be seen a super just set on the hive. The bees

immediately take possession to clean it up. They will at once go to work and store honey in the comb. The other picture shows the work as it progresses. The outside extracting-frame is partly capped. The comb-honey section next to it has honey in it, while the third has work just commenced. After the bees begin in the center ones they will push the work there a little faster, with the result that the entire super is finished at once and can be set aside for market without sorting.

I am running eighty colonies on this plan this year, and I have never had a single case of loafing, and the bees work with all the energy they possess. When I read of some who let the hive-body get clogged with honey, and the bees cluster out, and they "shake" energy into them, I thought the bee-keeper was the one who needed shaking instead of the bees. With the above system I usually have about six per cent of swarms. This was the worst year for swarms I ever had, and the per cent of swarms was ten.

Vincennes, Ind.

AN OPEN-AIR COLONY IN MICHIGAN.

BY A. H. GUERNSEY.

On Sept. 6, 1909, hanging on a limb $1\frac{3}{4}$ inches in diameter and 43 feet from the ground, I found a large swarm of bees which, without protection, had built combs two feet long and 13 inches deep. The combs were all covered with bees, and at first sight they resembled a young bear hanging with his back down. Two weeks later I went with my spring wagon, extension ladder, box, ropes, etc., to get it. I went up the tree, roped the limb properly so it would hang when cut off just as it was before, then sawed it off, and from where I stood lowered it slowly until it was near the ground. I then fastened my rope securely and went down. I placed a sheet of cheese-cloth under the bees, wrapped it up snugly to the cluster, and tied it around the limb at both ends of the combs, so that no bees could get out; then cut the limb a little beyond the combs at each end. I put the whole thing in a large box and took it home, 13 miles, with the loss of but very few bees.

After I had the picture taken I gave an exhibition

on the streets and at several homes, and but few bees were lost.

I expect to hang this swarm out on a tree in the open as a curiosity. I never saw a colony before in Michigan that would thrive and do well without protection. In a warm climate, of course it is a common thing.

Ionia, Mich., Dec. 10.

CREATING A DEMAND FOR HONEY.

How the Bee-keeper can Direct the Attention of the Public to his Honey.

BY FRED WULF.

There is no one better adapted to the work of helping the local market and creating a demand for honey than the bee-keeper himself. I have been selling and peddling my honey for the last six years, and find it the



A. H. GUERNSEY'S HIVELESS COLONY.



FRED WULF'S HONEY DISPLAY IN A GROCER'S WINDOW DURING A CARNIVAL IN SONORA, CAL.

only way to get honey properly before the public. As some of us know, the returns are often very small when we ship honey into the large cities and leave it in the hands of the commission merchants. With some effort on our part we can easily sell our crops at home and get the best prices.

Well do I remember how hard it was for me, when I first started, to enter into the spirit of talking and get courage enough to go from house to house and show what I had to sell. Now I have a route established so that I know just where to go, and I am selling more than three times the amount that I sold at first. Question after question asked—where the honey is produced, the reason why extracted honey is less in price, whether it is pure, etc. Some of these questions may be answered by the bee-keeper; but when it comes to making a general explanation, which I have found often takes fifteen minutes or more, I make use of the little leaflets entitled "The Food Value of Honey." Some people will keep on talking for a long time, and one of these leaflets is just the thing to hand to them.

I also get the storekeepers started. This I find as important as going out myself and peddling, for as a rule the merchant puts the honey on the shelf out of the way, and his customers see nothing of it, especially if it is *comb* honey. I always try to have the honey placed where it will be seen. This greatly increases the sales.

Occasionally I succeed in getting some merchant to make a display in the window, and this pays a big profit. Last fall during a carnival in Sonora, Cal., which lasted a week, I made a very attractive display of

an observatory hive of bees, and a house built entirely of comb honey. This attracted so much attention that the newspapers took it up. For instance, here is what the *Sierra Daily Times* had to say:

A HONEY HOUSE.

The honey house in the show-window of Michel's store is a wonderful thing, and should be seen by everybody. The frames of which it is composed, sides and roof, are of honey in the comb, unbroken and perfect. It is the work of F. Wulf, of Yankee Hill, and should be shown at the Portola as a Tuolumne Co. production.

Another paper had a picture of the honey house similar to the one shown in the accompanying engraving. The sections on each side were placed there to fill it out better. As the house stood in the show-window I had a round pyramid at each side. Over the door or entrance of the house I placed one of my regular honey-labels, on which were the words "Pure Honey from the Apiary of Fred H. Wulf, Columbia, Cal."

Columbia, Cal.

BEE-KEEPING IN TENNESSEE.

BY A. L. BOYDEN.

If bee-keepers of the North, where white clover and basswood are abundant, or those bee-keepers of the great honey-producing States in the West, where the alfalfa and sage produce such wonderful yields, have an idea that the production in the South is insignificant, a visit to some of the leading fairs and expositions, notably those of Nashville, and Dallas and San Antonio, Texas, would correct such an impression. We read in the last census that about ten per cent of

the farms in the North Central States report bees while thirteen per cent in the South Central States keep them, and the number of colonies in the South Central States is considerably greater than the number of colonies in the North Central States. The number of pounds of wax produced in the South Central States was at least 50 per cent greater than in the North.

We read in the same report that the three most important States at the time the last census was made, taking the number of colonies as a basis, were Texas, North Carolina, and Tennessee.

It is true that, ten years ago, the careful attention was not given to the bees in Tennessee that was found in many other States; but, due to the efforts of the Tennessee Beekeepers' Association, a marked difference will be found in the report of the present census.

At the time of the last report, the State was credited with a total of 225,788 colonies, and the average in each county seems to be

2000 colonies. A few counties showed as many as 4000 colonies, and but few fall below 1000 colonies.

The efforts of the Tennessee Association, and of the superintendent of the apiarian department, Mr. J. M. Buchanan, have resulted in a most creditable display of honey, bees, and bee-keepers' supplies at the Nashville fair for several years past. The daily papers, in speaking of the display, spoke most favorably indeed of it last October, commenting on the fact that it was one of



APIARY OF J. M. BUCHANAN, FRANKLIN, TENNESSEE.
Mr. Buchanan is regarded as a very successful apiarist.



ONE OF THE QUEEN-REARING APIARIES OF J. M. DAVIS, SPRING HILL, TENNESSEE.
Queens from this yard are known the world over.



EXHIBIT OF J. M. BUCHANAN, FRANKLIN, TENN., AT TENNESSEE STATE FAIR, NASHVILLE, OCTOBER, 1909.

the most attractive exhibits on the grounds. As usual, the number of exhibitors was not large; it seems to be this way at most of the fairs, even where a liberal premium list is found. It is somewhat to be regretted that more bee-keepers do not interest themselves in making exhibits, for, even though the premiums awarded will scarcely pay for the time and labor expended, it must be remembered that in no other way can such an opportunity be found for educating the public regarding the use of honey.

Due to the efforts of the exhibitors and superintendent, a very fine general exhibit was found last year in the Agricultural Building at Nashville; and by the efforts of these same men and the Tennessee Beekeepers' Association, the Tennessee State Fair has adopted quite a model premium list. It is none too early for bee-keepers to begin to lay their plans for fall exhibits. A list of premiums awarded will, we believe, be of interest to readers, not only in Tennessee but in other States.

The following awards were made:

- Best 10 lbs. of extracted honey in glass.
 First premium, J. M. Buchanan, Franklin, Tenn.
 Second " N. O. Walker, Franklin, Tenn.
 Third " R. D. Buchanan, Franklin, Tenn.
 Fourth " J. J. Reams, Franklin, Tenn.
- Best display of extracted honey, 50 lbs. or more.
 First premium, N. O. Walker.
 Second " J. M. Buchanan.
 Third " J. J. Reams.
 Fourth " Ira A. Moore, Nashville, Tenn.

- Best case of comb honey, 12 lbs. or more, quality and appearance to count.
 First premium, J. J. Reams.
 Second " J. M. Buchanan.
 Third " R. D. Buchanan.
 Fourth " N. O. Walker.
- Best display of comb honey, 50 lbs.
 First premium, J. M. Buchanan.
 Second " N. O. Walker.
 Third " J. J. Reams.
 Fourth " Ira A. Moore.
- Best 5 lbs. of granulated honey.
 First premium, R. D. Buchanan.
 Second " J. M. Buchanan.
 Third " N. O. Walker.
 Fourth " J. J. Reams.
- Display of labeled samples, showing honey from different kinds of flowers.
 First premium, J. M. Buchanan.
 Second " R. D. Buchanan.
 Third " N. O. Walker.
 Fourth " I. A. Moore.
- Best half-gallon of honey vinegar.
 First premium, I. A. Moore.
 Second " W. M. Joseph, Nashville, Tenn.
 Third " J. M. Buchanan.
 Fourth " B. J. Fox, Nashville, Tenn.
- Best display of beeswax, 25 lbs. or more.
 First premium, N. O. Walker.
 Second " J. M. Buchanan.
 Third " R. D. Buchanan.
 Fourth " J. J. Reams.
- Nucleus of dark Italians.
 First premium, J. M. Davis, Spring Hill, Tenn.
 Second " B. J. Fox.
 Third " N. O. Walker.
 Fourth " J. M. Buchanan.
- Nucleus of golden Italians.
 First premium, B. G. Davis.
 Second " B. J. Fox.
 Third " N. O. Walker.
 Fourth " Ira A. Moore.
- Nucleus of Carniolans.
 First premium, J. M. Davis.

Nucleus of Caucasians.

First premium, John M. Davis.

Second " I. A. Moore.

Third " J. J. Reams.

Nucleus of any other race.

First premium, J. M. Buchanan.

Second " B. G. Davis.

Third " J. J. Reams.

Fourth " I. A. Moore.

Display of queens in cages.

First premium, B. G. Davis.

Second " J. M. Davis.

Third " B. J. Fox.

Best photograph of apiary.

First premium, J. M. Buchanan.

Second " J. J. Reams.

Largest and best display of bees, bee-products, implements, etc.; exhibit to be made by individual bee-keeper.

First premium, N. O. Walker.

Second " J. M. Buchanan.

Third " J. J. Reams.

Fourth " B. J. Fox.

We believe Mr. J. M. Buchanan is again superintendent of this department; and while the premium list for 1910 may not yet be printed, it will undoubtedly be much the same as the above list for 1909, and information can doubtless be secured by addressing him. Bee-keepers who can do so should by all means encourage the superintendent and the State Fair Board by putting up a splendid exhibit the coming fall.

A BALKY SWARM.

BY EDW. T. MURRAY.

I am sending a photograph of a balky swarm that one of my neighbors had last June. This was the second swarm that issued from an old Langstroth hive. The bees started to build comb on the outside of one of his empty hives. Later on they commenced work in frames that were inside the hive.

Torresdale, Pa.



A SWARM THAT INSISTED ON BUILDING COMBS OUTSIDE THE HIVE.

OBSERVATIONS ON SPRING STIMULATIVE FEEDING.

When Bees Can Not Fly in the Spring, Stimulative Feeding is a Waste of Energy.

BY F. DUNDAS TODD.

That title is not right. You see I did not do any stimulative feeding at all, but I made a few observations which gave me food for thought, and I want to tell my conclusions to other people.

Most bee literature written on this continent is naturally from men who live in average regions; but the climate in this outpost is so different that we see things differently. It was somewhere in the Middle States that a little girl once said, "Just as soon as it gets warm enough to do anything it is too hot to do anything," which, by the way, is a rather neat way of expressing the sudden jump from winter to summer in most parts of the United States. In this part of the world, summer creeps upon us; one bee-keeper says spring here is a long-drawn-out agony. This year we had ten glorious days in the first half of March when the bees rushed in pollen at a tremendous rate; then for three weeks the weather was so cool, cloudy, or wet that hardly a bee left the hives. It may be safely said that, during that period, not a snap of pollen nor a drop of nectar was carried in.

On looking over the colonies on March 12 I found about a third of them rather short of stores, so I gave these a pint each of syrup, and no more have they had up to date. The very strongest colony was *in extremis*, living from hand to mouth; but it got to be the same as the rest. I had to go out of town immediately, so for a month the bees were run on the let-alone plan.

Now for the observations. In the middle of January I examined a hive, finding in one frame a patch of eggs that covered a space slightly larger than a dollar. On March 2 pollen began to be carried in, so on the 12th I overhauled every hive and found brood in every one that was queenright, ranging from two to four frames. The strongest hive, but a weak one in stores, had brood in two frames only. It was evident that egg-laying had started with the advent of pollen.

The next examination was on April 17, eight days after flight had been reestablished, and on this occasion I found that, with only six exceptions, the frames containing brood corresponded almost exactly with the number on March 12. Furthermore, as none were sealed the eggs must have been laid after the resumption of flight a week previously. The hustling queen had extended from two to six frames, leading the procession; yet in the matter of stores this colony was in bad shape, but strong in bees. The hive best provided with supplies, one of fair strength, had made no headway at all.

Here, then, is the noteworthy feature.

Brood-rearing, this spring at least, depended entirely on one fact. When flight was free the queen got busy; when it stopped, so did she. There was no question of pollen-dearth, as there was plenty of old pollen in the hives.

It is doubtless a good thing to have "millions of honey in the house" in spring; but when the bees can not fly, apparently they do not care to use it. So far as I can draw conclusions from this season's observations, I would rather have thousands of bees than millions of honey.

The principal conclusion I have arrived at is this: When bees can not fly, spring stimulative feeding, whether of sugar syrup or artificial pollen, or both, is a waste of energy.

I am aware that one swallow does not make a summer; neither is it safe to generalize from one season's observations; but, nevertheless, those made in a climate that is different from most are, I feel, deserving of record.

Victoria, B. C., April 26.

THE ESTABLISHMENT AND MAINTENANCE OF A BROOD-CHAMBER.

Eight vs. Twelve Frame Brood-chambers.

BY R. F. HOLTERMANN.

Continued from last issue.

In my experience with bees and the brood-chamber of the hive they occupy, I find certain conditions which govern. If I wish to establish a brood-chamber, there are conditions which have a bearing on that question. 1. The distance apart the frames are spaced; 2. The nature of the comb foundation used; 3. The number of bees with which it is established; 4. The amount of brood when a heavy flow begins; 5. The queen.

Now, I do not profess to name these in the order of importance. Such would seem to me to be something like solving the foolish problem often propounded—which is the most important, the hive, the locality, or the man? when any one of them left out would leave no problem.

1. The distance of spacing is important, I feel sure. Let me illustrate: In a super, combs may be spread so that ten combs occupy the space twelve normally do. But when foundation is used, bees come up, occupy, and build on that foundation much more readily when the spacing is normal than when it is abnormal. I use a brood-chamber spacing 17 inches inside the hive for 12 frames, using no follower, yet I am not prepared to say that slight variations from this will work any injury.

2. As to the foundation used, Jacob Alpaugh first directed my attention to this point, and I will give his words as nearly as I can recall them. He stated, "There are lots of queens condemned as not up to standard for laying, because the combs do not suit them. There are makers of foundation who, in the process of making, stretch the cells so that they are larger one way than

the other, or the foundation may be stretched in the hive through no fault of the foundation-maker. When this foundation is built out, the queen, from natural instinct, does not care to use them, and she loses much valuable time because she does not have suitable cells to lay in."

I heartily endorse this statement; and if the queen is to do her best, do not condemn her without a fair trial. The bee-keeper, not the queen, may be to blame.

3. In establishing a brood-chamber the nicest drawn-out comb can, as we almost all know, be secured by giving the bees no more room than they can well cover and draw out at one time. Bulging and uneven sections in supers, for instance, are often the result of too much room for the conditions which prevail when the comb is built out. The same holds good in a brood-chamber.

4. I aim at getting the brood-chamber well filled with brood before any thing like a heavy surplus honey-flow begins. With a good flow it is the tendency of the bees to fill all unoccupied space about the brood with honey, thus in a measure shutting off the opportunities to expand the brood-nest. True, some varieties of bees and some strains in perhaps all well-known varieties, will overcome this by prolific queens that either, by their own manifest energies or by that in combination with a trait in the worker bees, seems to gain ground with the brood and crowd the honey into the supers; but this process means a loss of time, and therefore lost worker bees later in the surplus honey-flow or for winter. For the same reason I avoid, in the honey-flow, taking combs of brood out of the brood-chamber and putting in their place empty comb, as, with a good strong honey-flow, these are often filled with honey.

For this reason, if a man has an eight-frame Langstroth hive, and he changes to a twelve-frame just at the commencement of a honey-flow, he may not get satisfactory results unless he has very prolific queens or a long honey-flow. He may even, unless he considers the honey in the brood-chamber, have a poorer honey crop. He can take a good eight-frame colony and add combs as wanted before a heavy flow; but with a heavy flow the bees may fill the added comb largely with honey. Where a bee-keeper establishes a large colony, goes into winter quarters with a twelve-frame colony instead of an eight-frame, and winters them well, he can then win out alongside of an eight-frame stock wintered equally well, and do it with less fussing and manipulation. If for any reason the colony lags in brooding or building up, as some may, no matter what the kind of hive, he can contract until a suitable opportunity offers for expansion.

5. The queen has already been referred to so often that nothing more need be said on this point.

In closing, let me say that the method of manipulating the supers has a bearing on

the maintenance of the brood-chamber, no matter what its size. Instead of violent breaks in the connection of the *established* parts of the hive, as prevails when the super next the brood-chamber is raised, I aim to take about half the filled or partly filled combs out, fill the vacant space with empty comb, then set the new super on top, having the empty frame above the empties below, and then take the combs which have been removed and put them above their former companions. This leaves the bees with an unbroken old and established connection to the top of the hives, and tends to crowd less honey into the brood-chamber. If comb foundation is used, the tendency to clog is even greater; but this is alike true with the small and the large hive. The eight-frame-hive man is no better off than the twelve-frame, on account of the tendency to set up the swarming impulse perhaps even worse.

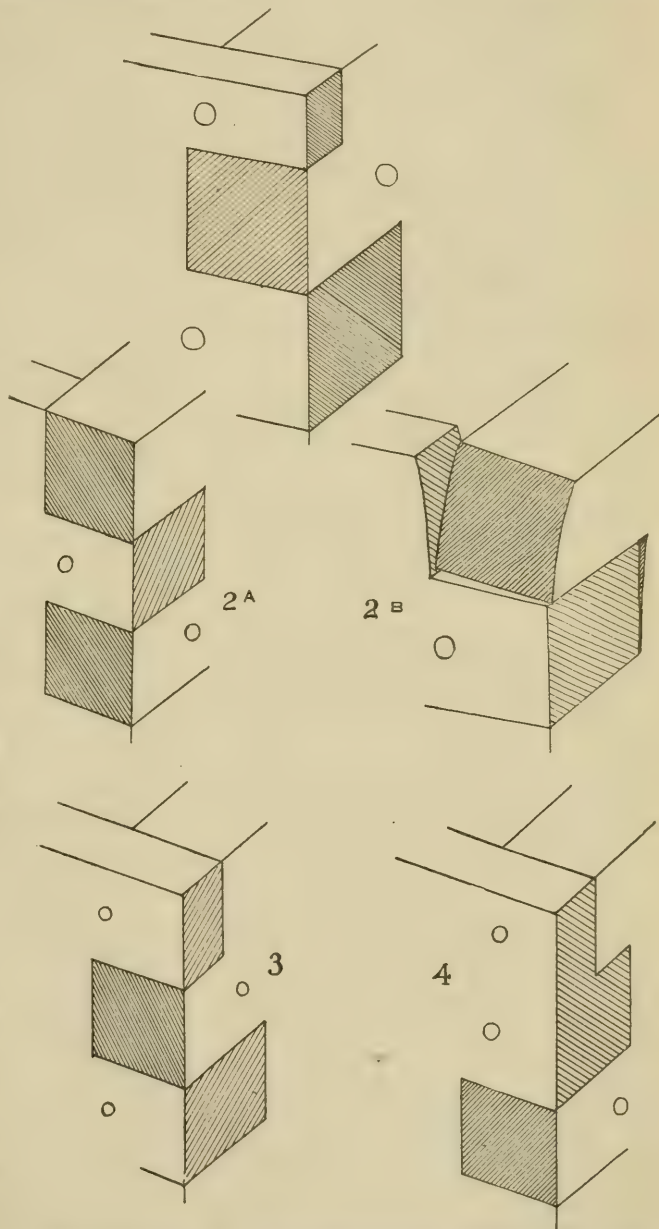
Brantford, Canada.

THE RIGHT AND WRONG WAY OF MAKING THE DOVETAILED CORNER.

BY WESLEY FOSTER.

Ever since the dovetailed corner has been used in the making of hives, the manner of cutting the top corners so as to obtain the strongest joint has varied. The desirable corner is the one which allows the 8 or 10 penny cement-coated nails to be driven each way nearest the upper corner and into the $\frac{3}{8}$ -inch wood. If an 8-penny nail should be driven through the $\frac{3}{8}$ -inch wood at the top in Fig. 2A, the nail would be so close to the end of the wood that splitting would most likely occur in the first board; and the end of the hive, being only half-inch stuff at this point, would split, or the nail would run outside the wood unless driven very carefully. Most bee-keepers who get hives made as shown in Fig. 2A do not drive a nail at the top, but as shown.

Then if they live in this arid country (especially) their hives look as in Fig. 2B. Bees easily start robbing at these corners, and mice often gnaw the holes larger and get into the hives. As soon as this spreading of the corner begins, the half-inch end-pieces down as far as the hive-rabbit split off very easily. I have had this happen in dozens of instances on both hives and supers.



THE PROPER WAY OF CONSTRUCTING THE DOVETAILED CORNER. FIG. 3 IS THE BEST FORM.

The strongest corner for a hive is shown in Fig. 3. Here an 8 or 10 penny nail can be driven within half an inch of the upper corner, while in Fig. 2A the closest nail to the corner is $1\frac{1}{2}$ inches. Fig. 1 shows how a dovetailed super-corner should be cut so as to insure strength. Supers are handled on the hives and in the shop so much that the constant sliding of supers on top of others breaks the half-inch upper ends frequently unless nailed as shown in Fig. 1.

Fig. 4 shows another corner method of joining that is better than that shown by Fig. 2A, but inferior to Fig. 3, because the two nails at the top are driven the same way, and do not keep each other in place the way crossed nails do.

Boulder, Col.

[Nearly all bee-hive manufacturers now make hives like that shown in Fig. 3.—Ed.]

BULK COMB HONEY NO COMPETITOR OF SECTION HONEY.

This Kind of Honey Sells to a Different Class of People.

BY LOUIS H. SCHOLL.

The discussions on this subject, started by the writer several months ago, are growing more numerous. They are bringing out many good points. While a few have offered some severe criticisms, others are showing favor toward this kind of comb honey. It is evident from these, and the scores of letters received, that this favor is increasing, and that there will be quite a future for comb honey in cans.

Bulk comb honey must be understood. Its advantages of cheaper, more economical, labor-saving, and profitable production and marketing must be understood before a fair and square comment or criticism can be made.

The recent discussions and criticisms are in all respects the same as those we had here in Texas when bulk-comb-honey production was first launched, with this exception, that *they* were limited to Texas bee-keepers.

While it gained favor with only a few at first, and was severely criticised and condemned by some, it was not long before its advantages in production over section honey were so plain that section honey vanished almost entirely, and this change has made our State famous for its bulk comb honey, and has put Texas bee-keeping on a more profitable basis.

We do not bespeak such a change for the North. We can say, however, that there would be many advantages gained if our method of comb-honey production were more generally adopted. What would it mean? Not only a more economical method by which larger yields of comb honey could be obtained, but even more than this. If, together with its manner of production, some of our methods of marketing were adopted also it would mean a more general

distribution of honey, an increased demand, and a better price. What more could one wish at this time when the cry of low prices of honey is in the air?

We know that a more general distribution, such as getting honey into homes where none is used now, or getting more in where only a little is used, would mean more for raising honey prices than all the other things combined. It is, then, our duty to look toward producing something that the masses can and will buy; and bulk comb honey helps much in this respect.

It is well known that most people prefer comb honey, not on account of a fear that extracted honey is adulterated, but because comb honey appeals to them most, and it is more like the real thing, especially if they remember the rich golden comb honey of a bee-tree, or that obtained from box hives at the old home. Section honey can never compare with that; and, besides, the price is out of the reach of the majority; and the honey from the bee-tree, log gum, or box hive, was "chunk" honey. Is it not natural, then, that bulk comb honey can be made to take its place, and profitably too? Of course, we do not claim that bulk comb honey will take the place of section honey. It need not, for there is an entirely undeveloped field for bulk comb honey among that great mass of people who can not afford the price of section honey, and who, at the same time, do not want extracted honey. There are thousands of homes where bulk comb honey can be introduced where no honey of any kind is used now. The home market needs only to be studied a bit, and every bee-keeper will agree with me that wonders may be wrought by selling more honey at home, keeping it off the glutted markets, and thus bringing up the prices to a point where they ought to be. Here is where bulk comb honey will find a great future, despite the few objections now raised against it.

New Braunfels, Texas.

LARGE ENTRANCE FOR WINTERING.

Honey-dew for Winter Stores.

BY A. W. FOREMAN, M. D.

Last year was the worst one for honey I have ever known. My bees got nothing but honey-dew, and in consequence I fed each colony about 15 lbs. of a combination of two parts sugar and one of honey. All entrances were left open full width of hive. Result, not a loss out of 13 colonies. I had a neighbor who had about 75 colonies. He fed none at all, claiming that he could not afford to do so. Result, I am informed he lost about 60 colonies.

About winter entrance, I have never believed in the necessity of greatly diminishing it.

Many years ago I knew a farmer who kept bees in oblong box hives made of boards about a foot wide and about two feet long.

These boxes stood on end and had legs nailed on the corners, and stood on these legs seven inches from the ground. I have often seen the bees pouring in and out of those hives during the working season. I do not remember having heard any complaint about their not wintering well; but I do know that, in my many professional visits to this house I often observed the bees as stated above. Of course these hives, being something like ten inches square, and more than twice that height inside, the bees had an opportunity to retreat high up away from the open end to winter. These were the common old black bee, so it does not seem necessary for bees under all conditions to be closely boxed in.

White Hall, Illinois.

[In times past we have had a number of reports showing good wintering in box hives with the bottom entirely open, or the sides shaky and full of holes; but black bees in box hives do die, so that we have not attached a great deal of importance to these exceptional cases.—ED.]

TWO TWO-YEAR-OLD QUEENS WINTERED TOGETHER IN THE SAME HIVE.

BY WM. A. STEWART.

I usually buy a few queens in the fall to supersede those that are more than two years old, and any that have not done well. Last fall I removed a very poor young queen from a colony that had superseded, and at different times introduced two old rejected queens that I had taken out of other colonies. The experiment was rather an accident, for the first one was so hard to find we thought she had been killed.

On March 24 (a very warm day) we opened this hive to look for brood to give to a queenless colony, and on two adjacent frames of brood we found these two old clipped queens. One of them was introduced in a queenless hive, and in nine days she had brood and eggs in three frames, while the other queen was left to do business at the old stand. So far as I have been able to learn, this incident of two *old* queens wintering together is unique.

Mr. Alexander, I believe, was not successful in wintering a plurality of queens; and Mr. Beuhne, of Australia (page 1203, 1908), separated old queens with excluders when he put two in one hive. He says, "You must have considerable difference in their ages before they will work together." The incident, however, suggests possibilities worth following up.

While I believe in superseding old queens, as a usual thing I do not find that they have any certain specified age for dying. For example, this spring all of our fifty hives had live bees in them, and only two were very weak; but five were queenless. Of the missing queens, one had presided over her colony since September, 1906; two since June, 1908; one since June, 1909, and the other

was a young queen supposed to have been successfully introduced last fall. The only queens we have that will be three years old this summer are the two that wintered together. This is not a very good showing for the age theory. Now, if we can find a way to winter the two-year-old queens without risking too many colonies, so that they can be given to queenless colonies in the spring, they will be about as valuable as young ones, for they are likely to be superseded in the coming summer.

If any one has wintered old ones in plurality, to give them another chance in the spring, I should like to hear from him. The nearest thing to it I find is from Elias Fox, p. 42, 1908, who found two *young* queens of the same age in a hive in the spring.

Our bees were wintered on their summer stands in Danzenbaker hives with a packed super. They had been flying, and visiting flowers (chickweed) for three days about Thanksgiving. A month after, the two queens were introduced, and flying again four or five days the first week of March; also, just before they were found, the bees had been flying for about a week. They were carrying pollen, and had about four frames of brood, so that both queens and workers had abundant opportunity to know all that was going on in the hive.

Elkin, Pa., April 8.

BEE-KEEPING IN SOUTHERN MEXICO, CENTRAL AMERICA, AND SOUTH AMERICA.

BY W. K. MORRISON.

About how much would it cost to ship honey from any one point in these countries to the States, per cwt? Are the common black bees native to those countries? If not, can these Germans and Italians stand the heat of the equator? Does foul brood exist in those countries? Most of the hardwood trees of the tropics are good honey-yielders, are they not? Are the swamp lands of the tropics good honey countries? In general the countries having the most rainfall would yield the most honey, would they not? How are the local markets in the above countries? Do the natives of the more uncivilized countries keep bees to amount to any thing? Do you have a supply depot in any of those countries? Where can I get more information along these lines? Any information you can give me will certainly be highly appreciated.

Ida Grove, Iowa. FRANK DAMEROW.

In reply to the above I would say that bee-keeping is profitable in certain parts of Mexico and Central and South America, but it varies very much, even in the course of a few miles. Rainfall makes the difference. For example, in the small island of Porto Rico the rainfall in one locality is about 150 inches per year, whereas it is not more than 30 in another locality not more than 40 miles away. It is about the same

in Jamaica. In some places the conditions are quite healthful, when a short distance off the opposite is the case. That is so at Panama. At Panama City the climatic conditions are excellent, while at Colon it is not healthful for a white man.

Down in these countries no one thinks of sending honey to the United States, for the very good reason the prices of honey are too low. By shipping to Europe they can do very much better in every way. In shipping beeswax there is a difference of almost 10 cents a pound in favor of Europe over America. The chief honey-exporting country of the world is Chili, which sends vast quantities of honey and beeswax to European ports. They would never think of sending either honey or wax to the United States. Peru is also an excellent bee country; and, though the finances of the country are managed by Americans, they, too, ship to Europe. The firm of William R. Grace & Company, New York, are the agents for Peru in this country. The railroads are owned by Americans. Americans also control the railroads of Ecuador. In the other countries of South America we cut no figure.

Venezuela and Colombia are excellent countries for any American to stay away from, and Bolivia and Paraguay are too remote. Chili is pretty well taken up by beekeepers, so there are left Brazil, Uruguay, Peru, and Argentina. There is a bee journal in South Brazil, and I think there ought to be a good opportunity for a first-class bee-man in the vicinity of São Paulo. The city of São Paulo is up-to-date in all respects, and has a population of about 65,000. There is also a chance at Rio Janeiro, the capital of Brazil. It has nearly 9,000,000 people and is a beautiful modern city. Buenos Aires has about 1,000,000 people, and resembles Paris in every way. There ought to be a good opening there for a live bee-keeper catering to fancy trade. Argentina has vast cattle estates planted to alfalfa, so the opportunities for a honey crop are good. Something might be done at the City of Mexico; also at the City of Panama.

Freight rates are so low that they cut no figure in large shipments; but one should always be near a seaport, for many reasons.

None of our bees are natives of South America. In the strictly tropical sections our bees die out at once unless carefully protected by mankind. Stingless bees in vast numbers occupy the tropical and sub-tropical parts. Where the rainfall is very heavy our bees can not be said to succeed at all. There are some of our bees around Caracas and Bogota, but only on high ground, and when carefully looked after. In Demarara (British Guiana) the bees are all of the Italian variety. Our bees do well in the two most southern states of Brazil, Rio Grande do Sul and Santa Catharina, and in Uruguay, Argentina, Chili, and the dry parts of Peru.

Yes, foul brood does exist in some of these countries, but not to any alarming extent.

The more prominent tropical trees do pro-

duce nectar, some very liberally. Among these are teak, rubber, mangrove, logwood, mahogany, and most fruit-trees.

Swamp lands are not good for bee-keeping. By far the best locations for bees are where the rainfall is light. Sections that require irrigation are best.

There is a splendid honey country in Mexico, just across the Rio Grande from Texas, where it is semi-arid. Perhaps the best honey region in the world is Baja California, where the rainfall is about 10 inches per annum. I would not again try to keep bees where the rainfall exceeds 60 inches. Speaking broadly, the less rain, the better it is for bees.

So far as local markets are concerned I do not think much of them. At certain points there are German, English, and Dutch traders who ship honey and beeswax, and pay cash for either. They will even extend long-time credit when they know you, and dealing with them is a pleasure.

In Venezuela, Colombia, Ecuador, Peru, Bolivia, Paraguay, and the valley of the Amazon, the *natives* are of the same race as our Indians, and you know the rest. When you see American newspapers referring to these people as "Latin-Americans," just smile. Costa Rica has a fair-sized white population, but it is an exception to the general rule. Needless to say, there is very little trading with such people. Many tribes have an unconquerable hostility to white men—for good reasons.

Yes, there are bee-supply depots at certain points. I think German firms supply the trade in Chili and Peru, and partly in Brazil and Argentina.

Most of the countries I have mentioned supply emigrants with first-class guide-books and maps. You can get such literature from the legations of those countries who maintain ministers or ambassadors in Washington. Some of them offer very enticing inducements to people who intend to settle on public land. Chili, Argentina, and Uruguay are probably the best in this respect. They are more generous than Uncle Sam himself. Mexico also offers inducements, more particularly in the territories of Tepic, Quintana Roo, and Baja California. But Mexico has much territory suitable for bees. Campeachy and Yucatan are the homeland of the logwood-tree, which blooms after every heavy rain, and supplies much nectar. In fact, the most common name of the logwood in Spanish and French is Campeche, pronounced *Campeach*. It grows on land with a coral formation, only a few feet above sea-level, with a thin layer of soil. Rain water disappears at once, which makes the country fairly healthy. If you were to locate in Lower California your chances would be brilliant. The honey crop is large and certain, the quality high, the selling easy, as it can be sold in San Diego. There is also a good chance at Monterey, where many Americans flock to in winter time. You have a vast region to choose from, and a selection is not easy.

San Diego, Cal.

BEE-KEEPING IN THE SOUTHEAST.

Chinkapin and Partridge Pea as Honey-plants; the Former a Great Honey-plant.

BY J. J. WILDER.

Along the high ridges of middle Florida will be found these honey-plants in all their glory, growing along together, and literally covering a large territory of the earth. The two plants are about the same in height—from 12 to 36 inches. The chinkapin springs up from roots and nuts, and the partridge pea from its peas. Both make their appearance about the same time in early spring, after the forest is burned. This kills the previous season's sprouts of the chinkapin back to its roots, causing it to spread more rapidly. By the first of May it is perhaps two feet high, and begins blooming, and is a solid cluster of bloom along the sprouts near the tops. It continues to bloom until about the first of June, and yields from 30 to 50 lbs. of honey per colony. The honey is blood color, but not at all wholesome. It is shipped to the northern markets in extracted form, and brings about 5 cts. per lb.

The partridge pea begins yielding about the middle of June, and lasts until October. During its flow, bees usually store about 100 lbs. per colony of comb honey, which is nearly water-white and of very fine flavor.

The peculiarity of this great honey-plant is that it does not yield its nectar through its bloom, but at the base of each leaf. On the top of the stem of the leaf is formed an oblong cell large enough to catch and hold a drop of nectar. This is very striking in early morning and late in the afternoon, but is reduced to about half its size during the middle of the day unless it is cloudy, when the drops will stand out prominent the entire day. Nothing interferes with its yielding throughout the season.

The greatest wonder is that bees do not gather a much larger amount of honey from this source. For fifty yards or more the cells of nectar can be seen sparkling like dewdrops in early morning. During the night the nectar will collect in the cells in such quantities that drops will leave and run down the stems of the leaves, on the limbs and main stalks, and wet the ground for an inch or more around the base of the stalks. It would take 1000 or more colonies in one location to save this great supply of nectar.

Mr. R. W. Herlong, one of the leading bee-keepers in this territory, is located at Fort White, Fla. His home apiary consists of about 200 colonies, located in single rows about 30 feet apart, shaded with boards. Mr. Herlong operates about 20 apiaries, and produces several carloads of honey each season. He is with the bees over eight months in each year, of which nearly six months is a honey-flow. He puts in from 14 to 18 hours of hard work each day, and perhaps this is why he is one of the few bee-keepers who have attained a great success. He does not manipulate frames, although he uses

the eight-frame Dovetailed hive. He claims that frame manipulation did not pay him when he had a small business, and that he hasn't the time now.

Cordele, Ga.

INTRODUCING A QUEEN TO A FEW BEES AND THEN TO THE ENTIRE COLONY.

BY E. L. KIMBALL.

We have been interested in the various articles appearing in GLEANINGS in the last few months on introducing queens, and also in E. R. Root's article on the method employed by queen-breeders in putting up bees to be sent by mail. Those who are afraid of the stings may be interested in the method we have employed in putting bees into mailing-cages for introduction in our own apiary. Taking a cage made of a coil of wire cloth, about $\frac{3}{4}$ inch in diameter, which has each end stopped with a wad of tissue paper, we go to the hive where it is desired to supplant the queen, and find and kill her. We then remove the tissue paper from one end of the coil cage, and, by scraping along the tops of the frames or some other convenient place, scoop into the cage as many bees as possible. This coil cage containing the bees is then placed in a dish or on a board right over a few drops of honey; or a few drops of honey are placed on one of the paper stoppers next to the bees so as to give the bees in the cage access to the honey. By the time the queen that we desire to introduce has been secured from another hive, and placed in this cage with the strange bees, all of these bees have had their fill of honey. These few uniformly accept the queen, and, as evidence of the fact, they immediately proceed to feed her. If we are not in a hurry, we pause a minute to watch this performance, which to me is one of the most interesting sights connected with bee-keeping.

Next, removing the paper stoppers of the coil cage one at a time, inserting a round stick slightly smaller than the wire cage into one end, and placing the other end over the open end of the mailing-cage, we gradually contract the space in the coil cage and gently crowd the bees and queen from the coil cage into the mailing-cage. The entrance of the mailing-cage is then filled with candy, and a small piece of comb-honey section is also nailed over it. The mailing-cage is then placed in the colony where it is desired to introduce the queen. After 18 to 24 hours the piece of section is removed, and the bees then make short work of liberating the queen, as only the candy obstruction remains. In this way a colony need not be without a queen over 24 hours. We have used the plan on a small scale for three years, and have always found it successful when carried out as above indicated. It is not necessary to take pains to select young bees to place in the cage with the queen if the bees are given an opportunity to fill their honey-sacs with honey.

Duluth, Minn.

Heads of Grain from Different Fields

Does a Swarm Without a Queen Ever Remain Hived?

Reading Doolittle's comments regarding a part of the swarm returning to the old hive, page 425, July 15, 1909, brought to mind a question over which I have puzzled somewhat. Do bees ever swarm and remain in a new location without the queen? A year ago I would have said no, unhesitatingly; but now I am not so sure about it. Last summer we had but few swarms, but, as usual, had a few hives piled up ready for use if needed. One day after scouts had been working about the entrance of one of them for some days a large swarm came from a distance and entered the hive. The swarm was so large that it was difficult for the bees to get into the hive, and I expected good results from so large a swarm early in the season. They set to work vigorously and built new combs, and were filling them rapidly when I first looked into the hive a few weeks later. The surprising thing, however, to me was the fact that no young bees were present in the hive, and all the brood was drone brood scattered about in the irregular way that unmistakably meant laying workers.

Seeing that the case was hopeless, since the working force had been very largely diminished during the honey-flow, and with no new bees to take their place, I set them over another swarm in order to save the few bees remaining. I should like to know whether any similar case has been observed, and whether the veterans can account for this in any other manner than the swarm coming off without the queen. In this case the bees entered the hive themselves without assistance, so there is no reason to believe that the queen might have been killed or injured by that operation; and had she been, the bees would likely have returned to the old stand. I believe that

DR. MILLER'S PLAN FOR SWARM CONTROL

is about the best I have read. I thought I had one about worked out with less labor. However, this season I have nearly 100 per cent increase, which indicates that I am on the wrong track and will have to go back and begin over.

STARTERS USED BEFORE THE FLOW BEGINS IN EARNEST.

On the question of starters I realize that I am not quite orthodox; but so far as I can see, there is very little difference in results where bottom starters are used and where nearly or quite full sheets are used above. Then I use small starters at the beginning of the season, for quite frequently the flow starts so slowly that the bees will tear down the starters before work begins. Later, when the flow is on in earnest, of course the larger the starter the better the result.

NO NEED OF WETTING SECTIONS.

I notice some comments on the best method of wetting the groove in the sections. For some time past I have not wet them at all, and find that, by using No. 1 sections, there is practically no breakage, and the work is much more satisfactory. I think that, without wetting, we do not break half a dozen sections per thousand, and we broke as many when wet.

Atlantic, Iowa, July 21, 1909.

FRANK C. PELLETT.

[The fact that you found no young bees and only drone brood does not prove that a queen did not go with the swarm. The strong presumption is, that one was present when the swarm went forth, and continued with it until it found its new quarters. The queen probably died from some cause almost immediately after she and her bees got in their new home. It is safe to say that no swarm would go far without a queen.]

In regard to the need of wetting sections, a good deal will depend on how long those sections have been made—that is, how *dry* they are. When sections are freshly made, or when the atmosphere where they have been stored is moist, probably no wetting will be necessary. Sections stored in a room heated by furnace or steam will require to be moistened at the grooves.—ED.]

To Prevent a Swarm from Issuing while Another is in the Air.

In my early experience I often had trouble with two or more swarms issuing at the same time and getting mixed up. This I find can be avoided by always having my smoker ready at a moment's notice. As soon as I see a swarm issuing I go into the yard; and if I see another swarm issuing I give them a good "drubbing" with smoke, and then they will not come out. I have used this plan for a number of seasons, and have never seen it fail.

WHAT TO DO WITH AFTER-SWARMS.

After-swarming is another thing that is often very perplexing to the beginner—how to prevent it or what to do with little worthless after-swarms. My plan may not be new nor the best, but I find that it works well and is quite simple. Hive the after-swarm in a super; take it back to the parent hive; place it over the old hive with a sheet of newspaper having several pencil-holes punched in it between, and the bees gradually filter through and seem to lose their identity. In three days I remove the super if the old hive does not need it, and things move along as if nothing had ever happened.

A gunny sack tied to a hydrant which is allowed to drip constantly makes the best watering-place for bees I have ever found. The water is always pure and thoroughly aerated, and no bees get drowned.

Rising Star, Texas, May 3.

J. W. BOASE.

The Bees of Shaded Colonies Work Right Along During the Hottest Part of the Day.

The past season I had six colonies that were so shaded by apple-trees that the sun shone on them only a few hours in the late afternoon, and, strange as it may seem, these were the colonies that gave me the most honey the past poor season. While it is true that colonies that are out in the sun work somewhat better early in the morning, I am convinced that the shaded colonies make up for the loss during the hottest part of the day. I have noticed again and again, no matter how hot and sultry it was, the shaded colonies worked right along, while those that were out in the scorching sun did not work nearly as well from noon to two o'clock. Then the shaded colonies did not make preparations to swarm as early as those that were out in the sun; in fact, some of them never tried to swarm, and, consequently, they were the ones that gave me the most honey.

La Crescent, Minn., Feb. 23. G. A. BARBISCH.

[Your experience seems to be the opposite of most others, if not all others, that have reported. This is an important question, and we hope others will report.—ED.]

Yellow Sweet Clover in Kansas, etc.

Yellow sweet clover commenced to bloom here the last week in April. It is in full bloom now, and all kinds of stock like it. As for pasture, sown with alfalfa it prevents bloat. All missed places and alkali spots I sow with it. I have four acres of it. I think it is next to alfalfa for pasture and forage crop. I sowed a bushel of alsike for pasture this spring—the first I have tried. I put it on bottom land. They say it does better there than on upland. The yellow sweet clover does not grow as rank as the white, and makes better pasture.

Concordia, Kan., May 11. JOHN W. WILSON.

Old Foundation Just as Good as Fresh.

In regard to old or new foundation, I will say my experience shows the old is just as good as new—that is, I always begin putting foundation in the sections in the fall and winter for my next season's crop. I almost always have to put in a few the next spring, and I can't see any difference. They work on one just as well as the other.

Luce, Mich., May 9.

W. CRAIG.

Silverhull Ahead of Japanese Buckwheat.

As regards Japanese buckwheat, page 250, it has been strictly out of it for years in this neighborhood, as it does not yield as many bushels as the silverhull, and the local mill and buyers prefer the latter variety.

Coleman, Mich., April 28.

F. H. CLARK.

Our Homes

By A. I. ROOT

Whatsoever a man soweth, that shall he also reap.
—GAL. 6:7.

From a recent number of the *Sunday School Times* I clip the following:

WHAT WE SEND CHINA.

The Great Northern Steamship *Minnesota* at Seattle, June 2, on the sailing-day, carried to Japan and China twenty millions of cigarettes and a little group of returning missionaries. One of the awful demoralizing influences to-day in China is forced on them by the makers of the many brands of cigarettes, who come from Christian lands, each vying with the other in a ruinous trade.

Twenty million cigarettes! and on the same ship with them a "little group" of returning missionaries; and our United States is permitting this thing to go on! What does it mean? We are making great progress—yes, *wonderful* strides—in science and art, and recently along the lines of protecting the health and well-being of our people. The Food Commission is doing a wonderful work in demanding that all kinds of eatables to be found in our groceries shall not only be honest in weight and measure but free from adulterants—especially adulterants that are harmful to the purchaser. Our babies are having better *milk* than they ever had before, and thousands of little lives are being saved, and their little aches and pains are being banished. May God be praised for what has been done along this line. Yes, the *honey* that is now being produced and sold, not only every day in the year, but sold in almost every corner grocery, is *pure* honey—no more adulterations with glucose. Thank God for that. Our butter and cheese (and canned meats) are more healthful and wholesome than ever before. There is some grumbling, it is true, because they cost *more money* on account of the strict laws passed by several States and by the general government of the United States; but where *human life* is being imperiled we can well afford to *pay* a little more money. As a result of the teachings of Terry, Fletcher, and others, we are preventing sickness, pain, and death, and doing it, too, without the use of drugs and powerful medicines. Once more may God be praised that we seem to be getting out of the darkness of ignorance and superstition and into the glorious light of true science and a better understanding of God's laws.

Now, notwithstanding all these great reforms, our government is pushing (or is *permitting* the pushing of) the hellish cigarette traffic into "heathen" China and Japan. Hold on a bit! It will hardly do to put Japan side by side with China; and, by the way, why does not Japan, with the wonderful progress she is making, and the example she sets other nations in sanitary matters, bar out American cigarettes? God knows how I dislike the very thought of

war; but if nothing but war will stop this awful traffic, I should like to see Japan wage war on the United States. More than that, I should rejoice to see her come out victorious. Yes, I would go still further. I would see her trample the stars and stripes under foot, until our people will bestir themselves and hoist a "stainless flag."* Let us look at it again. Twenty million cigarettes on the same boat that carried missionaries to China and Japan. By the way, the *Sunday School Times* took the clipping I have quoted from the *Christian Herald*. At first I thought it might be a mistake. About a year ago I gave you an extract from a letter written by a good woman who was a missionary in China. She told us how the missionaries, when they converted Chinese, tried to stop the sale of cigarettes, especially their sale to little children in a certain town in China. But the American Tobacco Co. succeeded in stopping the missionaries on the plea that they were "interfering with trade and commerce in China." They even compelled the Chinese officials of that town to take down printed notices that had been put up, cautioning those poor ignorant people of the dangers of the American cigarette.

I once before asked the question, "How many of the legal voters here in our own country are in favor of the cigarette business?" I said not one in ten; but after my estimate I received several letters to the effect that there might be a great deal larger proportion in favor of the cigarette traffic; but if it were made a matter of *local option*, I feel sure the small towns and country precincts would vote out the traffic by a *tremendous* majority. How is it, then, that we fail year after year—that is, so many of the States fail? Thank God, there are a few States that enforce a severe penalty against the sale or use of cigarettes. It is because the rich manufacturers make and enforce our laws in *spite* of the protests of the people. May God hasten the day when the *mothers* of our land can have a chance to vote on tobacco and whisky, if nothing more.

Once more, let me ask why it is that, with all the rigid investigation into every thing that concerns the health of our people, cigarettes, tobacco, and whisky are passed by and overlooked? I do not exactly know who is responsible for it; but there seems to be a general consent among our officials who stand away up in the affairs of government, that the liquor business or any thing connected with it must not be touched, on the ground that it would "interfere with trade and commerce." It has been suggested that even the *President* of the United States is not permitted by those round about him to say a word in his annual message in regard to the traffic in the baleful thing that amounts to more in a year than our schools,

* In olden time God permitted his chosen people to be taken captive to Babylon because his holy laws were set aside by that nation. In the same way our nation will surely lose its standing and power unless these terrible sins and crimes are put down.

churches, and every thing else that is good and pure and holy in God's sight.

You remember our talk about corn, and how it has been demonstrated again and again that a little scientific work in select-our seed corn will add bushels and dollars to the corn crop. Last fall we went over our field corn just before cutting, and selected four bushels of nice ears, taking each ear from a hill of four good stalks. A few days ago I picked out five kernels from each ear of corn, and planted them all in the greenhouse, numbering the ears from one up to about a hundred. As the corn was kept carefully all winter near a steam-pipe, almost every one of the 500 kernels sent up a good strong shoot. At first I began to think my test was useless, for *every kernel* was going to grow. At the final examination, however, I found a little more than 12 ears where only four kernels grew instead of five. The fifth one had rotted, or was very slow in starting. By discarding these ears our seed corn planted had an excellent chance of having *every kernel* that we plant have good strong vitality. It is not only the farmers here up north, but the gardeners down around Bradentown, Fla., who have just discovered that it pays, and pays tremendously, to have the very best strain of seed that can be produced. We used to have our crop injured sometimes in the fall just *because* of a lack of good seed. Our leading seedsmen have of late caught on to the importance of furnishing particular customers nothing but the very best. In market-gardening, raising chickens, horses, cattle, or pigs, we are making great progress. The government is issuing bulletins, and the separate States have other bulletins, giving the farmers the benefit of the very latest scientific investigation; and our experiment stations and agricultural colleges and universities have done likewise. Now just wait a minute. On page 613, Oct. 1, last year, you will find in fine print the following:

There are two widely prevalent diseases, both contagious and infectious, that are causing untold human misery and loss of life, and *nothing* is being done to prevent them.

After that was printed I suggested it must be a mistake. It seemed to me incredible that *nothing at all* had been done in the way of prevention. The above statement came from the Ohio Board of Health, and so far I have not been able to find there was any mistake about it. Our nation and our separate States, as I have said, are doing wonderful things to improve the health of our horses, cattle, and pigs, but nothing as yet to protect our children along the same line. Of course, we are giving children better health, and we have stopped to a great extent giving the baby "soothing-syrups" containing morphine and other baleful drugs. And this paves the way for me to tell you something that perhaps not all of you know already. Cigarettes especially, when given to children, not only make them imbecile, but it is a powerful promoter of a precocious development of the sexual in-

stinct. Prof. Winfield S. Hall, of the Chicago University, has just been called by our Medina Y. M. C. A. to come here and give his celebrated lecture to boys and young men. Knowing that I was interested in this matter I had a special invitation to go and sit with over two hundred boys and listen to Prof. Hall. His lecture was directed principally to this matter of explaining to the boys sexual matters and warning them of the fearful results that follow from careless trifling with these wonderful functions God has implanted within us to perpetuate the human race. Prof. Hall has himself made some startling discoveries along this line. The boy who makes no progress in his studies—the one who is weak and puny in both mind and body, is, nine times out of ten, the boy who has fallen into the cigarette habit, and through that into something even worse. After I listened to Prof. Hall a kind friend sent me a book called "Perfect Manhood," by Prof. T. W. Shannon, Fredericktown, Mo. Prof. Shannon's book is so much in line with Dr. Hall's lecture that it is a matter of surprise; but as nearly as I can determine, neither one knows any thing about what the other is doing. "Perfect Manhood" is a good-sized book of 128 pages, and yet the price is only 25 cents, in paper, or 50 cents in cloth. If this book were put in the hands of every boy in his teens in the United States, my opinion is that no one living can estimate the amount of good it would do.* The writer, it seems, is employed in going about giving lectures to men and boys, and this book is a history, largely, of what he has met in his travels. After his talk, many sufferers have come to him for advice and counsel. He is a minister of the gospel, and a veritable John the Baptist, delivering his message to a sinful and suffering people.

Some way or other it seems as if the great Father above were sending a *lot* of messages along this line all at once. Here in our own town of Medina, in order to encourage a spirit of unity among the denominations we have a union meeting every Sunday evening, instead of four or five meetings in that many different churches. A minister of one denomination preaches one night, and another the next, and so on. But just recently the ministers all stepped aside and invited Prof. Carlton, superintendent of our Medina schools, to occupy the pulpit. One of our good-sized churches was crowded with people. In his talk Prof. Carlton put strong

*Below is Judge Lindsley's opinion of another book by the same author after having read it:

Every boy should read or hear such lectures as the four you have published in "The Twentieth Century Boy." It seems to me that you have taken the matter up along proper lines. The lessons shown from the flowers and animals in your first lecture is a very helpful and inspiring method of imparting such a delicate but very necessary knowledge. Your second and third lectures, showing the relation of the vital force to ideal manhood, and how the dissipation of this energy produces stunted boys and defective men are masterpieces of vital truths presented in simple language. With kindest regards I am sincerely yours, — BEN B. LINDSLEY, Judge of the Juvenile Court, Denver, Col.

emphasis on the fact that boys in our good moral town of Medina were using tobacco, and smoking cigarettes contrary to law; and, furthermore, he said the parents of said boys seemed careless and indifferent about it. He said he thought it would do some of us good to have him talk right out plain. His words, so far as I can remember, were something like this:

"As a rule I do not have much difficulty in enforcing obedience. I have, however, recently utterly failed in getting one certain boy to obey. I am going to tell exactly where I failed. In spite of every thing I could do he persisted in squirting tobacco juice down the register. This not only made it unpleasant for us in a room containing sixty or seventy pupils, but it endangered their health. When I found I could not make him stop it I decided to confer with his parents. I thought of writing to his father; but remembering that the father himself might be a user of tobacco I decided to try the mother; and as I was crowded for time I called her up over the telephone, and stated, as gently as I could word it, the trouble that confronted me. Dear friends, I shall always remember that woman's answer as long as I live; and I am going to tell you what it was so far as I can recall it. It was about as follows:

"Mr. Carlton, who is running that school, any way?"

"I told her I was trying to run it the best I knew how. Then she said:

"Well, if you can not run that school and make the boys mind without my assistance, with all I have got on my hands already, I think you had better let somebody else take the job."

"Then she hung up the receiver."

After the above he said something further about as follows:

"My friends, I very much dislike to stand up here and complain; but there are things going on in our Medina schools that the parents evidently know nothing about, but which they ought to know *all* about. I have had charge of schools in some of the worst city slums; I have been in places where you would naturally expect obscenity and profanity to be at their worst; but I think it is my duty to tell you that, during my stay of two years here in the Medina schools, there has been more obscenity, profanity, and passing around from one to another more filthy stories than any other place I have ever been in. I know that Medina has an excellent name on account of her well-filled churches; I know that saloons have been banished from your midst for many years; but, notwithstanding, these things have in some way got in among your children, and it needs *earnest* and *prayerful* care and attention on the part of both parents and teachers. May God help us as we work together, not only for decency and purity, but for *true manhood* in the best and broadest sense of the word."

The last part of the above may not be the exact words he used, but it was the sense of

his talk so far as I can recall it; and permit me to add, may God help us as a nation and a people in our energetic fight for robust manhood; and may he help us to remember that it is not only true in agriculture and farming, but it is true in the schools and in the home, that "whatsoever a man soweth, that shall he also reap."

May 23.—Since the above was put in type I have listened to a lecture by the Rev. A. S. Gregg, of the National Reform Bureau, in which he stated that we already have a law in Ohio, recently enacted, and signed by the Governor, making it a severe offense to sell, give away, or *supply* to any boy or young man in Ohio, under 18 years of age, cigarettes or tobacco in any shape or form. As we go to press I have not been able to learn just what the penalty is; but Mr. Gregg has promised me a copy of the law very soon. He said the penalty would be fine or imprisonment, or both, and he thinks the *first* offense is punishable by a fine of \$100. May the Lord be praised for this just and righteous law; and may he be praised again for having answered our prayers much sooner than any of us expected. The next question is, "Will the law be enforced?" Some of the venders of liquors in dry territory have been not only astonished but *terrified* by fines that almost took their breath away, and pulled so hard on their purses that they will not be likely to go into the same business again very soon. Over in China they have had some keepers of opium-dens who undertook to defy law, in regard to their business. When the Chinese officials found, after repeated arrests and fines, that nothing else would answer, they *took off the heads* of something like half a dozen of them, that other transgressors might have a more wholesome regard for law, order, and decency.

Poultry Department

By A. I. ROOT

EGGS WITHOUT SHELLS; DROPPING EGGS FROM THE ROOSTS AT NIGHT; SHELL-LESS AND WITH SHELLS.

On page 332 of our last issue I said the Buttercups would be making a good record were it not that one of them had a habit of laying shellless eggs. Now, lest any of you should get the impression that these tricks belong particularly to the Buttercups, I submit the following, which is from my brother, who has charge of my southern poultry-ranch in the summer time:

I find that many of the other hens outside of the Buttercups are dropping their eggs without shells. I got around earlier than usual one morning, and found one hen off the roost eating a shellless egg. The next morning I got up before they were off the roost, and found five eggs without shells under the roost. That included the Buttercup that dropped hers regularly. I at once got some green oyster-shells and pounded them up and put them in each yard. I will watch to see if it helps any. This morning, May 12, I got up before they did, and I found but one—that was the Buttercup. The hen I set the night before you left, on that lot of full-

blooded Buttercup eggs would not sit. I changed her for another, and she bothered for a day or two and finally got settled down. The day for her to hatch passed, and not a chick. I was going to break her up; but my wife said, "Let her make up the lost time and she will get some chicks, any way." So I left her, and this evening I saw four nice little ones.

Bradentown, Fla.

J. H. Root.

The above letter gives us a glimpse of two possible leaks in the poultry business—yes, and they may be bad ones too; but after scanning our poultry-journals, thirty or forty of them, for a year or two, I have scarcely seen the thing mentioned. How many eggs do you suppose are lost in this way, especially when the proprietor does not get around in the morning before the chickens have got down from their roosts? It does not belong particularly to Florida, because I have seen the same thing here in the North.

As there are two points at issue right here, let us discuss first the shellless eggs. When my brother mentioned the matter I wrote him to give them plenty of lime in different shapes, and also to give them plenty of wheat bran besides a variety of grains. Very likely the matter of shellless eggs can be corrected. I told him to get also some fresh bones at the butcher's, if he could, and grind them up in a bone-mill. This ought to correct the trouble in two ways. It not only gives the chickens plenty of lime, but it gives them an abundance of animal food. I had trouble with shellless eggs here in Ohio a few weeks ago. I now find some eggs where there seems to be a surplus of lime in the shells—little lumps of it toward the small end. Now, then, for the other trouble—

DROPPING EGGS AT NIGHT WHILE ON THE ROOST.

My brother has told you of finding five eggs one morning under the roost, and I have had more or less of this kind of work ever since I can remember. In order to prevent the eggs breaking, I try to have plenty of soft clean litter under the roosts every night. Down in Florida the light sandy soil is raked over every morning till the surface is so soft that an egg is seldom broken if it drops during the night. Of course, the roosts should be low down. Ours are only 20 inches, with the soft sand underneath. Unless such precautions are taken, great numbers of eggs may be lost entirely. If you have many fowls it will pay you to get around early to gather up the shellless eggs or broken ones, and have them for breakfast. I hardly need to suggest that carelessness and indifference in this matter will teach your fowls to eat their eggs; in fact, I have had ours learn to eat eggs in this way, and I have broken them of the bad habit by taking more pains to get around so as to get a glimpse under the roost before a single chicken had gotten down from her perch. Prevention in this case is certainly better than cure. Whenever you have reason to suspect that any hen in the flock is learning to eat eggs, it will pay you to gather the eggs several times during the day. I think a lot of egg-eating hens can be cured—at

least where they have not got to be too bad—by simply watching under the roosts and gathering the eggs several times during the day, and at the same time, of course, having plenty of nests, and having each one of those nests in the dark so the hens can not very well see how to break the eggs. Having the nest just large enough so the hen has not very much room to kick the eggs about is another wise precaution. Be careful, also, about giving a hen any nesting material that contains grain or weed seeds, or any thing else that might induce a meddlesome or inquisitive half-grown chicken to scratch around in the nest. Such troubles as I have mentioned are more apt to develop where a good many laying hens are kept in one yard. My experience is that it is much easier to keep things of this kind in check where not more than fifteen or twenty are kept in a yard.

As several have inquired about poultry in the summer time down in Florida, I propose to have my brother keep us posted. Just now he writes that the different yards are giving just about enough eggs to pay for the feed. Now, this does not look very encouraging unless we consider there are only about 70 laying hens, and toward 200 half-grown chicks, some of them almost old enough to begin to lay, or at least we would consider them so in the North. If the 70 hens furnish eggs enough to feed the whole flock, little and big (at this season), I think they are doing fairly well, especially as he is all the time raising chickens more or less.

VERMIN ON CHICKENS PREVENTED BY GROWING EUCALYPTUS-TREES: A "DOLLAR SECRET" THAT COSTS NOTHING.

Mr. A. I. Root:—I have just been reading in your department how to keep down lice and mites in the chicken-coop. I wish to tell you a secret of my own that I accidentally discovered. We used to spray our coops with several kinds of solutions recommended for that purpose. We sprayed two and three times a month, and oftener in warm weather, until I planted some blue-gums, or eucalyptus-trees, around the coops. The trees were grown to make fence-posts and wood when large enough. After they were about six months old I noticed the insects were not so plentiful in the coops, and quit spraying. That was seven years ago, and we now do not bother in the least about the insects, and they do not bother the chickens in our yard; but our neighbors who have not the trees complain with all their spraying, while those who have planted trees around their chicken-yards say it works like a charm. That secret is worth a dollar, but I don't charge any thing for it.

Escondido, Cal., May 8.

JAS. A. NELSON.

Friend N., I hope you are right about it; but if you sprayed your premises faithfully for some time it would be nothing strange if the vermin should disappear and stay away, and it might, therefore, be that the eucalyptus-trees had nothing to do with it. If, however, your neighbors are still troubled where they have none of these trees, and their neighbors where they have the trees are not troubled, it would seem to be quite conclusive that you are right about it. And, by the way, so far as I can find out, the eucalyptus has never been made to grow in Florida. I think I have heard, however, that a new variety has been dis-

covered recently that will thrive in that State. Have any of the Florida friends succeeded in growing eucalyptus? Florida, like other places, will very soon need to be thinking of growing trees for lumber, fuel, etc.

POULTRY SECRETS, ETC.

One of the saddest things about the "secret" business is that even women have been tempted to go into it. I have several times written up the Missouri woman who sells a secret for picking out the fertile eggs before they go into the incubator, etc.—the woman who gets a dollar for the secret and then insists on 50 cents more for a very poor common 10-ct. egg-tester. Well, this other woman also hails from Missouri. Below are some clippings from one of her advertisements:

MRS. LITHA ALLEY'S NEW POULTRY METHOD; HOW TO MAKE ONE HUNDRED HENS LAY EIGHTY EGGS A DAY; I WILL TELL YOU.

My method has been obtained and perfected from my long study and experience with chickens, and I believe that I have at last discovered the true secret of successful poultry-raising. There is one thing sure, I certainly know how to make hens lay from 10 to 50 times as many eggs in winter. You can't keep them from it when my method is followed. I have the proof in eggs. Half of my chickens have laid every day during the worst weather we have had this winter, and it has been so cold that the eggs would freeze and burst before I gathered them up every evening. Your hens will do the same for you if you follow my method.

OFFER NO. 1.

This is my first and original grand offer of my new poultry method, "How to Make Hens Lay More Eggs, Winter and Summer." I will send my poultry method free, with the necessary amount of food ingredients, with full directions, postpaid for \$2.00.

OFFER NO. 2.

I will send all ingredients necessary, my methods with full instructions and directions, for one-half of the eggs produced while you are using the food ingredients I send.

OFFER NO. 3.

In this offer I send my new poultry method, already described, with my recipe instead of the ingredients, all complete, just as described, postpaid, for only \$1.00. It is all yours then for life. I am willing to accept orders on this offer. I do not advise it; however, be sure to take some one of them. I want every woman in the United States to have the benefit of my discovery and poultry method. My reason for not advising the acceptance of offer No. 3 is that some people may not be able to secure all seven of the different ingredients my recipe calls for, or the druggist may substitute something else, thinking it would make no difference in a chicken remedy, and thereby bad results may be produced.

THE WAY TO MAKE CHICKENS PAY—SEND FOR MY NEW METHOD TO-DAY.

There are only two things necessary to make every hen you have lay every day, and that is my method, and—the hens.

MRS. LITHA ALLEY,
New Madrid, Mo.

Please notice offer No. 2. Out of the kindness of her heart she sends you full instructions for half the eggs the hens lay while they have this wonderful food. There is nothing said about keeping account of how many eggs are laid before the experiment. Whether they will lay any more eggs or just the same, you are to give her half. While reading it I began to wonder how she was to get her half—probably by "parcels post" or some such way. Well, here is the wonderful secret. If it is worth a dollar apiece to all

of our 35,000 subscribers, just think what a lot of good our poultry department is doing.

Below is given my short method, "How to make hens lay more eggs." While it is a brief method it embraces the main or principal features contained in my complete method, which I have developed and perfected from my eighteen years of study, observation, and experience with chickens, and for producing bushels of eggs and frying-sized chickens for market.

My short method to make hens lay more eggs this winter, which contains all information that is necessary at present and will meet the needs fully at this time is as follows:

Take of pulverized copperas,	6 ounces;
" capsicum,	5 "
" gentian,	5 "
" fenugreek,	11 "
" ginger,	6 "
" venetian red,	10 "
" willow charcoal,	5 "

Add 2 lbs. of ground shells if obtainable. Mix all together, and then add the other ingredients as directed below.

Mix the above with 11 pounds of wheat bran and 8 pounds of linseed meal. If you can not get linseed meal you can use cotton-seed meal or ground alfalfa instead. The linseed is best if you can possibly get it, of course. If none of them can be obtained you can use all-wheat bran. It is not so good, however.

FOR FEEDING.

Give to each 24 hens about one quart or more once per day in a shallow box. Keep it before them all the time they will eat it, whenever they like. When chickens refuse to eat it altogether, stop their regular feed for a day or so and they will then eat it.

By the way, the recipe is written on a typewriter. It is not only poor writing for a typewriter, but poor spelling, and some of the letters we had to guess at. Now, then, friends, do you believe it is really *true* that she spent eighteen years in deciding *just* what stuff to get at the drugstore, and to determine that 5 oz. of one, 6 oz. of another, 11 oz. of a third, etc., was just the very best proportion? In real scientific work, for instance at our experiment stations, they do actually make exhaustive and expensive tests to determine not only the ingredients needed, but about the proper amount required of each. Now, *this* is real science and sound common sense; but the stuff some concoct to make hens lay, to cure poultry diseases, and, in fact, to cure human beings, is certainly a lot of arrant nonsense and humbug. As an illustration, I went into a drugstore and told the drug man I wanted something to kill sticktight fleas. He poured something out of ever so many bottles. I thought once he was going to make a mixture of every thing he had in the store. He handed it back, saying, "There, that will knock them out, sure." Price 25 cents. But his compounded stuff did not do as much good as common kerosene right out of the can; and we afterward decided that plain sal-soda alone, that costs only 3 cts. per lb., is better than any of the advertised nostrums. Let us now go back to the subject of "making hens lay."

Possibly the above mixture *will* have some influence on their laying, but I doubt it. Along with the secret come certain directions about giving the fowls food and water, sanitary housing, etc., that would of itself, without any drugs, probably increase the egg-yield; and last, but by no means least, if I

am not mistaken, that whole recipe was copied from some printed book. And this is only *another* illustration that the largest part of the peddled secrets are copied from some book or periodical. As nearly as I can remember, I saw the same thing given in some poultry-book; but I can not just now lay my hand on it. Just one thing more:

How many of the fifty or sixty poultry-journals published in the United States are helping GLEANINGS to ferret out and expose these frauds? There may be half a dozen all together that have put in an encouraging word; but none of them seem to have the "nerve" (if that is the word) to *publish* these so-called secrets and give the full name and address.

SKUNKS KILLING MATURE FOWLS, ETC.

I am busy running an incubator now, and am interested in A. I. Root's chicken talks, as I have been raising chicks for ten years. I sell from 100 to 200 every spring by hatching in an incubator and putting with sitting hens and selling the whole—sometimes as many as 30 chicks with one large hen. I never had quite the troubles Mr. Root had; but last fall skunks ate up all my best pullets just about as they were about to begin laying.

Barre Plains, Mass.

MRS. G. L. EDSON.

GOING TO FLORIDA TO GET RICH, ETC.

We clip the following from a full-page advertisement in the *Up-to-date Farmer*:

We can prove to your entire satisfaction that sweet potatoes retail in the large cities for \$1.25 to \$1.50, and that you can raise a crop of sweet potatoes and two other valuable crops on the same land during the same 12 months. We can prove that you can raise 400 to 500 bushels of sweet potatoes per acre.

650 BUSHELS PER ACRE.

Mr. A. J. Hinson states that his "average yield of sweet potatoes is 450 to 500 bushels per acre, but that he has raised as high as 650 bushels." We have this statement over his signature. Now, it's easier to raise sweet potatoes than corn; but, granted it costs the same, this is equivalent to thirteen hundred bushels of corn to the acre, figuring at 50 cts. per bushel, and potatoes at \$1.00 per bushel. Then you can raise two other crops of other truck on the same land during the same 12 months.

The chief objection to fruit-raising is, it takes so long. We are after providing homes for deserving people who haven't money enough ahead to wait several years for fruit-trees to grow.

POULTRY.

Five years ago a Northern settler, with very little money, located near Green Cove Springs, Fla., and started in the poultry business. To-day he has about 3000 chickens and receives \$13,500 annually for eggs alone. The tourist hotels of Florida furnish a great demand for eggs and poultry. Not so much capital is required for this business, as the winters, being so mild, very little housing is required.

It certainly is very commendable for that Florida land company that they are so energetic in "providing homes for deserving people;" but I am really afraid they are after something besides pure philanthropy. As usual, a part of their statements are true or sometimes true. Sweet potatoes do sell in some places at from \$1.25 to \$1.50 per bushel; but how about getting them to market? They say, "We can prove that *you*." Now, it may be true that an expert, during a very favorable season, may raise from 500 to 600 bushels to the acre; but the average man from the North would not do any thing of the kind. Again, in regard to poultry, if

the 3000 chickens were all laying hens, \$13,500 would be a *tremendous* success. These people are careful not to give the *names* and *addresses* of the successful men. They end up with a grain of truth. The Florida hotels *do* furnish a demand for eggs and poultry at good prices, and little or no housing is required to keep chickens in Florida. But I tell you there are some other things that *are* required. Go and try it on a small scale if you wish; and also go and talk with the average man who raises sweet potatoes or keeps chickens. If such chances are "lying around loose," how is it that my farm, right in neighborhood of Green Cove Springs, would not sell for more than \$5.00 or \$6.00 an acre? There has been no better price offered for the last dozen years.

NO BUSINESS FOR THE GRAND JURY AS THE RESULT OF MAKING A COUNTY DRY.

In May 1st issue, p. 304, I asked the question how the people of the counties that have voted wet could look a good man or woman in the face, etc. Well, the *Cleveland Press* for May 5 tells us that Lake Co., O., containing the beautiful city of Painesville, with over 7000 inhabitants, has, for the first time in the history of the county, or memory of the oldest inhabitant, dismissed the grand jury in *just 25 minutes*. When the county voted wet they had thirty or forty cases, and the jail was full of criminals; but now there is "nothing doing" there. Further, they have just built a beautiful new jail with all modern conveniences, but there is not a cell occupied, and not an inmate to make use of the beautiful new furniture. The mayor of the city says it is his opinion that voting the county dry accounts for the new order of things. And, by the way, would it not be a good way to go a little slow in building new jails and penitentiaries? There is just now a big rumpus going on in the capital of our State because our penitentiary is not only unsanitary, but it is not large enough to hold the inmates, particularly the *boys* and *young men* of Ohio. Now, instead of investing something like a million of dollars in a new penitentiary (out in the *country* somewhere), had we not better take half that amount, or less, and go right to work and make the capital of our State a dry city? Why! if the farmers and the people inhabiting our small towns were permitted to have a fair chance in the work, we might not only make Columbus dry, but the whole State of Ohio. It was Ohio that gave birth to the Anti-saloon League, and kept it going through years of discouragement. Is it not fitting that Ohio should (I can not say *lead*, for the Southern States have done that already) fall into line and set an example to the other States here in the North by banishing the entire traffic from our borders, and stop making bigger penitentiaries and asylums? God help us.

Cleanings in Bee Culture

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Editorial

OHIO NOW HAS AN UP-TO-DATE FOUL-BROOD LAW.

In the opinion of some of the best experts in the country it is one of the best measures that was ever enacted. The Ohio State Board of Agriculture, on June 1, established a "Division of Apiary Inspection," with State Entomologist N. E. Shaw as chief inspector. Inspector Shaw has already begun work, and we shall expect in the near future that the two brood diseases, European and American foul brood, will be under State surveillance. Hereafter, progressive beekeepers who have been annoyed by foul brood in their vicinities will be in position to compel ignorant or negligent neighbors to eradicate the disease from among their bees.

COMB-HONEY CANARDS REFUTED.

DR. D. E. LYON, of Allendale, N. J., has done not a little to disabuse the public mind of the old heresy of manufactured comb honey. There has been running a double-column ten-point editorial, with appropriate illustrations, in a number of our daily papers, entitled, "The Model City in Miniature." Among other things the statement is made that there is no such thing as manufactured comb honey and never was any. Authority for that statement is drawn from a book by Dr. Lyon, entitled, "How to Keep Bees for Profit," recently published by the McMillan Company, of New York. This work will doubtless be widely read, and, of course, will do a great deal of good, not only stimulating an interest in bees but a demand for honey. See mention of it elsewhere.

DR. E. F. PHILLIPS, OF THE BUREAU OF ENTOMOLOGY, AT MEDINA.

On June 1, Dr. E. F. Phillips, of the Bureau of Entomology, apicultural expert in the Department, called at Medina. He is making a rapid tour of inspection through several States, gathering general data on the subject of brood diseases. He is preparing a map of each State, showing the distribution of American and European foul brood as it exists in the various States. The present tour, we understand, will be confined

largely to Michigan, Illinois, Indiana, and Ohio. He will return to Ohio about the 15th to meet our State inspector, Prof. N. E. Shaw, and his deputy inspectors.

The data that Dr. Phillips has gathered will be of great value to the various States. While, of course, these maps will not be made public, the information will be placed before the various State inspectors with a view of helping them to locate disease.

ANTI-ROBBER CAGE.

WE have been using for some time a neater and lighter form of cage that has proved very satisfactory. It is much more roomy than a tent, and may be moved about just as easily. It is so light that it may be quickly lifted up and tilted back, hence no door is necessary. Reference to the illustration, page 386, will make the construction clear. The framework, being on the inside of the wire cloth, makes a good hold for lifting, carrying, etc., the operator, of course, walking inside the cage when it is moved.

We have found no top necessary, although it would not be difficult to put wire cloth over the framework if it were needed. In a queen-rearing yard, or in any yard where manipulation is necessary during a time when bees are not gathering much nectar, and are, therefore, prying into every thing, one of these cages is a great help.

We use wire cloth on our cage, as it is not so easily torn, and is more permanent; but if one wanted a still lighter cage, mosquito-netting could be used instead. If the framework as well as the wire cloth is painted it may be left in the yard throughout the whole season without injury.

THE DANGER OF COLD WEATHER BEFORE THE HONEY-FLOW IN THE SPRING.

THIS year has been peculiar in that the long spell of hot weather over a large portion of the country in March caused the colonies to start brood-rearing at a wonderful pace. Much of the stores were used up in this manner before any new nectar was brought in, and there was danger at once of starvation. Fruit-bloom was prolonged by a series of cold days; but, on account of the weather, comparatively little honey was stored. From that time on there were so many cold days that many colonies died from no other cause than a lack of food. The stronger the colonies, the more danger of starvation. For this reason we are fearful that many colonies will be found dead—starved—when they

should have been ready for supers. The fields to-day, June 3, are beginning to whiten with the white-clover blossoms. Happy is that bee-keeper whose colonies are strong enough to be in good condition by the time the warm weather finally comes!

UNCLE SAM GETTING AFTER PATENT-MEDICINE FAKIRS.

THE United States Department of Agriculture is busy prosecuting those who are violating the provisions of the national pure-food law. It is pleasant to see that the Department is getting after some of the purveyors of deadly patent medicines, especially headache cures. The manufacturers of these nostrums are not allowed to make any false statement concerning their alleged cures. For example, many drugs practically worthless have claimed to cure every thing under the sun; and unless these drugs contain some remedy well recognized by the general medical fraternity to cure some specific disease or malady it will come under the ban of Uncle Sam.

MISBRANDING OF HONEY.

The Department has been particularly active in getting after those who are misbranding their food products. Syrups and jellies have been misbranded galore. The first instance we have seen where honey has been misbranded was in the case of Henry Boeckmann, of Brooklyn, N. Y. We copy direct from leaflet No. 269, issued by the Department:

On or about October 7, 1907, Henry Boeckmann, of Brooklyn, N. Y., shipped from the State of New York into the State of New Jersey a quantity of a food product labeled: "Compound pure comb and strained honey and corn syrup, A. Boeckmann, Brooklyn, N. Y." Samples from this shipment were procured and analyzed by the Bureau of Chemistry, United States Department of Agriculture; and as the findings of the analyst and report thereon indicated that the product was misbranded within the meaning of the Food and Drugs Act of June 30, 1906, the Secretary of Agriculture afforded Henry Boeckmann and the dealer from whom the samples were purchased opportunities for hearings. As it appeared after hearings held that the said shipment was made in violation of the act, the Secretary of Agriculture reported the facts to the Attorney-General, with a statement of the evidence on which to base a prosecution.

In due course the evidence was presented by the United States Attorney for the Eastern District of New York to the grand jury, who presented an indictment against the said Henry Boeckmann, charging the above shipment and that the product was misbranded, in that it was labeled "Compound pure comb and strained honey and corn syrup," which statement was false and misleading, in that it represented the principal ingredient of said product to be pure comb honey, whereas, in fact, the principal ingredient was glucose and starch sugar.

INJUDICIOUS FEEDING.

PERHAPS there is no one part of bee-keeping that is so much overdone by the beginner as the feeding for stimulative purposes. Our Mr. Bain remarked to-day, "I believe there are barrels and barrels of sugar fed to colonies and nuclei when the bees would have been better off without it." Here is the point. In many parts of the country the weather, especially in the spring and

early summer, can not be relied upon. The beginner believes that his bees should be stimulated, and gives each colony or nucleus a rather too liberal supply of syrup. The bees at once are excited, the queen is fed, and a nice lot of brood is started. The weather meanwhile turns cold; the bees, not being in sufficient numbers to cover and care for this brood properly, carry out great numbers of the larvæ around the edges of the circles of brood comprising the brood-nest.

Or, suppose the weather does not become cold. Another lot of feed is given in a short time, and the bees, excited almost to a frenzy, go to work and carry out the brood, whether it is dead or not, and *store the syrup in its place*. Soon after this the main honey-flow may begin, and the bees, having been used to storing the syrup in the brood-combs, prefer to keep on storing there, and it is very difficult to get them to work in the supers.

If there are several nuclei that need feeding, be careful not to feed the weaker ones, or robbing will be started. Furthermore, if the weak ones are fed and stimulated, brood is likely to be carried out as above stated. Mr. Bain's plan is to feed only the stronger nuclei, and draw from them either brood or honey to help out the weak ones.

NO CAUSE FOR ALARM.

IN the November 1st issue we published two articles on a disease of adult bees, one written by Dr. C. C. Miller, and the other a translation of an article by Herr Alois Alfonsus, the editor of *Bienen Vater*. Both of these articles were reports of a paper by the distinguished head of the K. Anstalt für Bienenzucht at Erlangen, Dr. Enoch Zander, read before the Weissenfels convention of bee-keepers last August. Dr. Zander reported that a protozoon (animal parasite of microscopic size) named by him *Nosema apis* is the cause of a disease of adult bees, that the disease is highly infectious and very widespread, and that it constitutes a serious menace to the bee-keeping industry. The publication of these results has tended to alarm many bee-keepers on this continent who fear that some new disease will be introduced into America, and add to the troubles which we already have in the two brood diseases. There is no cause for such alarm.

Dr. Zander was working with the well-known dysentery, and finds this organism in it. He does not claim that he has discovered a new disease, but he was merely searching for the cause of the trouble. The supposition mentioned in the articles that the organism *Nosema apis* is responsible for other adult diseases, is not yet proven; and, even if that be the case, they will be no worse scourges when their cause is known.

The trouble which we call dysentery is recognized to be induced by improper food for winter, such as honey-dew combined with long confinement. The undigested portions of honey-dew fill the intestine un-

til the bee is greatly distended. When a day suitable for flight comes, the droppings are seen all about the hive; and in severe cases the faeces are deposited in the hive. The fact that dysentery can be produced and prevented at the will of the bee-keeper makes it no serious malady to the progressive members of our ranks. Last season, when honey-dew was so abundant in the eastern United States, it was predicted that the winter losses due to dysentery would be great. Such was the case, except among bee-keepers who were forehanded enough to remove the honey-dew and supply good stores. We can, therefore, predict dysentery and take steps to prevent it.

The practical bee-keeper need not worry about this question, but leave it to those qualified to investigate the organism which Dr. Zander has found. If *Nosema apis* is the cause of dysentery, it is now present with us and we need not worry about its introduction. Whether or not it is the cause of the disease, there will be no greater losses from dysentery when the question is settled. In the meantime it should be remembered that the supposition that *Nosema* is the cause of paralysis, May disease, Isle-of-Wight disease, or any other adult malady, is only a supposition and not a claim of the author.

HOW FOUL-BROOD INSPECTION IS CARRIED ON BY VARIOUS STATES.

As most of our readers know, there is considerable difference in the laws that have been enacted by the legislatures of various States in regard to bee diseases, especially in the matter of the appointment of the inspectors. For instance, in Wisconsin, according to "Bee-keepers' Legal Rights," published by the National Bee-keepers' Association, the inspector is appointed by the Governor. In New York the Commissioner of Agriculture appoints the inspectors of bees. In Michigan, the Pure-food Commission; in Missouri, the State Board of Agriculture; in Nebraska, the Governor; in Colorado, the county court; in California, the board of supervisors of the county. In Utah the appointment of a county inspector is made on petition of a majority of the bee-keepers of this county. In New Mexico this is done by the Board of County Commissioners. In South Dakota the Governor appoints the inspectors; in Canada it is the Lieutenant-Governor in council under the recommendation of the Minister of Agriculture.

It will be noted that some of the States have county, some district, and some State inspectors. In the West, where there are many bee-keepers in a county, and where the number of colonies kept warrants the appointment of a man for the county alone, it will be seen that county inspection is a practical plan. In smaller States of the East, for instance, where the counties, of course, are much smaller, and where the number of colonies kept in a county is comparatively small, a county law is practically

a dead letter and amounts to nothing. In some cases groups of counties are taken, called districts, or one man may have charge of the inspection throughout the whole State. The full text of the new Ohio law was given in our March 15th issue, page 171. This is a law with some modifications of the one that Dr. E. F. Phillips drew up and recommends. The great advantage of a law of this kind is that no special appropriation need be set apart for the inspection work, the State Board of Agriculture assuming the expense, at first at least. Legislatures can be induced to pass such a law when they would refuse if a separate appropriation had to be levied.

Indiana has a statute very similar to that of Ohio. The State Board of Agriculture is authorized to appoint a competent entomologist as chief inspector, who may have under him assistants. The regular State entomologist is logically the one to take this work.

Ohio is to be congratulated on having, as its State entomologist, Prof. N. E. Shaw, who, besides being an entomologist, is himself a bee-keeper. The bee-keepers of Indiana are also to be congratulated on having their State inspection work under the supervision of their State entomologist, Mr. Benj. W. Douglass.

WHAT IS BEING DONE IN INDIANA.

The second annual report of the State Entomologist of Indiana for 1908-'9 is just out, and gives a very excellent report of the work done by Geo. M. DeMuth, assistant in charge of Division of Apiculture, working under the State Entomologist. Our readers will recall the notice of Mr. DeMuth's work in the article by Walter S. Pouder in our Feb. 15th issue, page 111. It is very evident that Mr. DeMuth's work has been very thorough, and we are sure that he will do all in his power to check the trouble in his State. His report covers some 42 pages, containing a large number of exceptionally fine illustrations that show a good many of the details in bee-keeping as well as the *modus operandi* of inspecting an apiary.

After a brief history of bee-keeping in the State, a list of the honey-plants is taken up and discussed, with the dates when each plant blooms. One great hindrance to the development of the bee-keeping industry is found to be the use of hives from which the combs can not be readily removed for examination. This includes not only log gums and box hives, but neglected colonies, etc. An inspector is further hindered in his work in promoting successful culture of bees by the bee-keepers who give their colonies absolutely no attention or care, so that the combs are probably all built together. Mr. DeMuth rightly points out that one of the main causes of failure in securing a crop lies in not having the colonies in proper condition at the beginning of the honey-flow. The lamentable fact is that the bee-keepers who need this advice probably never read the bee-journals nor take the trouble to secure a copy of this report.

In this report, foul brood, both American and European, is fully discussed and differentiated. The American type is found to exist in 16 counties in Indiana, and the European type, formerly known as black brood, in 18 counties. A map is given showing the distribution of the diseases. The McEvoy method of curing is advised for both diseases, and in addition the inspector recommends disinfecting the hives. Caution is given against trying to winter diseased colonies or allowing such colonies to exist in a weakened condition in such a way that they may be easily robbed out by other colonies in the spring, and the disease thus spread. A discussion is also given of pickled brood, starved and chilled brood, dysentery, etc. Remedies for moths and other enemies of bees are suggested.

This report shows that Mr. DeMuth made 513 visits to 480 apiaries located in 22 counties. In all a total of 6036 colonies were inspected, of which 1431 were found to be diseased, either with American or European foul brood. Of the entire number it was necessary to burn only 58 colonies. Only 328 colonies out of the 6036 were kept in box hives. These, of course, could not possibly be treated. On this account it is unlawful to permit bees to remain in box hives in apiaries where disease is known to exist.

What has been found in Indiana will doubtless be found in Ohio. The State-wide law for the Buckeye State was enacted none too soon.

THE NAMES EUROPEAN FOUL BROOD AND AMERICAN FOUL BROOD.

WE frequently receive letters from our subscribers here and in Europe who claim that the names "European" foul brood and "American" foul brood should have been reversed, claiming that American foul brood is the prevalent disease in Europe, and that European foul brood is more widespread in America than in Europe. Some of our European friends claim that European foul brood is not even present in Europe, while others claim that it was recently introduced, and graciously give American beekeepers credit for sending it over. In view of these complaints it may be well to reiterate the reasons why the Bureau of Entomology gave these names to the two diseases of the brood. It is evident that in some quarters the facts are not understood.

In the first place, the names were not given to imply the geographical distribution of the two diseases. In the preface to Dr. White's bulletin, Technical Series No. 18, Dr. Phillips says:

Both diseases are found in Europe as well as in America, so that the names indicate nothing concerning the geographical distribution of the maladies.

It is obvious that a reversal of the names would not help matters any in this regard. Doubtless American foul brood is the prevalent disease on both continents.

The names were chosen so that the words "foul brood" would be included in both

names. This was done primarily so that there would be no confusion in the laws in force providing for apiary inspection in the different States. Furthermore, the name "foul brood" had become associated with *Bacillus alvei* through the work of Cheshire and Cheyne, so that it was fitting that the words be retained in the name of the disease in which Cheyne, doubtless, obtained his material for study, European foul brood. In this country, "foul brood" meant American foul brood, and the best and most logical way out of the difficulty was to call them both "foul brood" with adjectives to distinguish them.

The qualifying terms were chosen chiefly to get some easily remembered names. European foul brood had evidently been studied by a European, Dr. Watson Cheyne, who described *Bacillus alvei*. American foul brood had been studied by an American, Dr. G. F. White, who for the first time called attention to the fact that another bacterium is present in this disease, and who has since established the fact that *Bacillus larvæ* is the cause of the disease.

The claim that European foul brood is not present in Europe, or even that it is a recent introduction, can not be admitted from the evidence at hand. All of the recent workers on the diseases of the brood as found in Europe report symptoms and results of bacteriological examinations which show that European foul brood is not only present but is well established, as shown by the frequency of such samples. It is true that many European bee-books do not recognize two diseases, and describe what we call "American foul brood," ascribing it to *Bacillus alvei*; but this indicates merely that the authors have copied the old beliefs concerning foul brood and have not taken into account the recent work here and abroad. Writers who have been writing of foul brood as being produced by *Bacillus alvei* may have some hesitancy about admitting that their past statements have been incorrect, especially if they have not had practical personal experience with "European foul brood." It must be remembered that some of the best European beekeepers have long recognized two brood diseases. Among these may be mentioned Dzierzon, whose place in the front rank of beekeepers will not be questioned, and whose observations are recognized everywhere as excellent.

Another point which should be mentioned is that it is unimportant whether or not our terms European foul brood and American foul brood are translated into other languages and used by foreign beekeepers. Many terms used in bee-keeping by American beekeepers are not literal translations of the equivalent German terms, for example. It is important, however, that the terms be defined clearly, so that foreign beekeepers reading our articles on disease will know exactly what is meant. The two diseases are so defined, and there should be no confusion on that score.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

IN THIS CLIMATE there is no trouble with a dovetailed corner like 2A, p. 355. But I use cleats the whole width of the hive, and wouldn't do without them.

SEVERAL TIMES I've been credited with saying that the queen might convey foul brood. I never said that—don't know whether she does. What I said was that the queen in a colony affected with European foul brood seems to have deteriorated.

A. I. ROOT, if you want cigarettes put out of business, get the women to vote. In Illinois, one woman, Lucy Page Gaston, has done more to oust cigarettes than all the men combined. [My dear old friend, Lucy Page Gaston is one of my very special friends; and I suspect she has had a good deal to do with our new Ohio law in regard to cigarettes mentioned in another column. I am right with you to a dot in working and praying for the time to come when women (especially the *mothers*) may have the right to vote on every thing that concerns the best interests of their boys.—A. I. R.]

THE BLACK-BEE Macdonald-Holtermann controversy, p. 339, will never be settled so long as they discuss two different kinds of black bees. Italians are better than American black bees. They may be inferior to other black bees. [Has it been definitely proven that the black bee of England is better or worse than the black bee of America? We infer that the English bee is superior because of the fact that it is favored by so many English bee-keepers, while apparently the same race of bees (blacks) in this country is condemned and discarded by most progressive men on this side.—Ed.]

AUTAN is a new formaldehyde preparation used in Europe for disinfecting combs infected with foul brood of the stinking kind (American?); but it has no effect on the non-stinking kind (European?). [We have tried all kinds of drugs for disinfecting combs, and we are very skeptical about any of them being of any value whatsoever. The difficulty lies right here: If the drug is strong enough to kill the microbes it is strong enough to kill the larvæ or the bees. In talking with Dr. E. F. Phillips, of the Bureau of Entomology, we found that the experience of the government experts was practically the same as what we had years ago. We are firmly of the opinion that, the sooner bee-keepers give up all notion of drugs and medicines to cure brood diseases, the better it will be for the pursuit in general. Speaking about formaldehyde, we tried it thoroughly, and we have had reports from others, but we have yet to hear of a case where formaldehyde, formalin, or the same drug in any other name, has been of any

permanent value in eradicating brood diseases.—Ed.]

I DON'T UNDERSTAND, Mr. Editor, your fear that an excluder may be needed to keep pollen out of sections when they are put over a crammed ten-frame brood-chamber, page 338. The trouble should at least be no less with eight frames, and the trouble with them is so little that I never think of using excluders. But the sections must be *filled* with foundation, else drone comb will bring brood and pollen into the sections. [Certainly, if a queen-excluder were needed on a ten-frame hive it would also be needed on an eight-frame. There would be very little difference in that respect. We only meant to suggest that possibly it might be necessary to put on an excluder; because, after crowding two stories of bees into a 1½-story, there would be a possibility that the queen would prove very annoying in the upper half-story, especially if extracting-combs were used. We are quite prepared to admit that, when running for comb honey, there is very little need of using excluders.—Ed.]

THE RARITY of laying workers preached by Allen Latham and the editor, page 345, amazes me. In this locality, and I suspect that I am speaking for many others, a laying worker is no such rare bird. I think I have had them every year. I may be "careless or ignorant," but I insist that laying workers are no proof of it. On the other hand, the diminutive queens that are blamed for the trouble are practically unknown here. Generally it is easy to say whether laying workers or a poor queen are present. When you find drone-cells occupied to the neglect of worker-cells, with more than one egg in a cell, and especially when you find queen-cells with a dozen eggs in each, you may be sure of laying workers. I am not sure I ever knew a case of laying workers without five or more eggs in a queen-cell, and I think I *never* knew a queen, even the scrubbiest kind of a scrub, to lay more than two eggs in a queen-cell. But I have known laying workers to lay quite regularly in worker-cells, and one egg in a cell. [We understand that you have hybrid bees. If you had among those hybrids a little sprinkling of the eastern yellow blood—that is, Holy Lands or Cyprians, we could readily understand why the laying-worker might not be a rare bird in your locality. Mr. Latham uses what we understand to be plain hybrids. We have used Italians mostly in all of our yards for years. With the ordinary leather-colored stock, that is, such Italians as come from southern Switzerland and northern Italy, the laying workers are rare indeed; but among the golden Italians, especially if that extra-bright color comes from Cyprians or Holy Lands, we expect to find now and then laying workers. It is hardly probable that you would find scrub queens in a yard run exclusively, or almost exclusively, for the production of comb honey. In our queen-rearing yard, however, they bother some, especially when cells are given to colonies.—Ed.]

Bee-keeping in the Southwest

By LOUIS SCHOLL, New Braunfels, Texas

Cut comb honey, as described and illustrated so nicely by the editor some time ago, is receiving quite a little attention. Have you thought that it is only one style of *bulk comb honey*?

The Southwest Texas honey crop so far is the shortest obtained for a number of years, according to numerous reports received. The demand is strong, and prices are higher than usual. We, further northeast, have already secured a nice crop, however.

An automobile for out-apiaries has been our desire for a number of years. Up to now we have not found just what we thought we wanted. Then we were undecided whether we wanted to haul honey, etc., with it or not, or whether we needed only a runabout, and let the hired help do the hauling with wagons. Now it seems to be the latter. What do you think about it?

Bulk comb honey—yes, *bulk* comb honey—is the proper name. “Chunk” honey is very rarely used here, and some of “we-uns,” at least, would rather not have that “chunked” at us by our Northern friends. The two are entirely different articles with us; and it will be very easy to use the proper name if it is remembered that ours is simply comb honey in bulk, hence *bulk* comb honey. After it is more extensively produced in other parts of the country it will be better known.

SOME OF OUR ADVANTAGES.

We have several advantages in bee-keeping that not all bee-keepers can have, although others are so situated that they might have them. One of the main advantages we have is the scattering of our apiaries so that we do not have our bees all in one or the same kind of location in one locality. One may experience a short crop, and even an entire failure occasionally, when thus situated; but entire failure is very seldom possible when apiaries are located in various and entirely different localities. Thus it is that we may have a shortage where we depend on an early spring harvest entirely. Were all our bees here or in similar places we might suffer. Instead, we pay all our attention to other apiaries in localities that obtain their harvest from summer or fall sources, leaving those of the first localities alone for the while. Or it often happens that rainfall is very light at a number of apiaries and plentiful at others, so that we can leave the former and spend all of our time with the latter, and thus obtain a good crop. Even local showers play a great part in a honey-flow in localities only

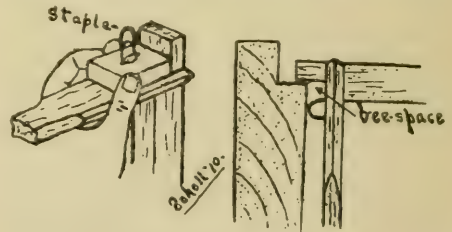
several miles apart at times, so it pays to scatter the yards.

Our extensive business not only takes in the scattering of apiaries several miles apart in one part of the State, but we have gone further than that by having about half of our apiaries in an entirely different part of the State, several hundred miles away. Here, as well as nearer home, of course, the general practice of scattering the apiaries is carried out to take advantage of changed local conditions.

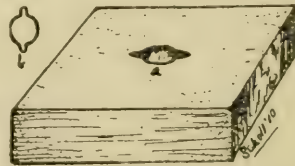
While we have almost an equal number of apiaries at each place, fourteen here in Southwest Texas and twelve in Central Texas, we never know which series will require most attention and give the largest honey crops. For instance, at this time it is very dry in the Southwest, and people generally are complaining of drouth and unfavorable prospects, while we have had heavy rains several hundred miles east, where our other bees are, and the prospects are the very best; therefore *we* are not complaining. That's an advantage.

SCHOLL'S NEW FRAME-STAPLE BLOCK.

The wooden blocks with a saw-kerf at each end, sent out for use in driving the end-spacing staples, have been very unsatisfactory in several respects. First, we prefer our



staples $\frac{3}{8}$ inch from the end of the top-bar, leaving a passageway for the bees, and therefore eliminating the lumps of propolis generally found where the staples are closer up. Besides, this brings them out of the way of our finger-tips to a great extent when handling the frames.



With the staple spacing further down, the frame is held more square and true. While the plain saw-kerf was all right in the hands of a careful person, most of our staples slanted either up or down in it, and we had to look for something more satisfactory. Nothing better could be adopted than the one shown herewith, for our boys now can't help putting every staple just where it ought to be. The block can be made of wood, but we have several of iron. Simply bore a $\frac{1}{8}$ hole $\frac{1}{2}$ inch from the center, and saw two kerfs in this as shown. A rat-tail file is used for the metal ones.

Siftings

By J. E. CRANE, Middlebury, Vt.

Hive-stands recommended by F. Greiner, p. 149, Mar. 1st issue, are very satisfactory.

Whew! but don't they do business down in Texas in destroying foul brood the same as every thing else? See pages 77—80.

I don't know which I admire Dr. Miller most for—the nice things he says or the mistakes he sometimes makes. Both are comforting. See page 143, March 1.

Page 162, Mar. 1st issue, Mr. J. D. Yancey tells us how his bees gather honey from the leaves of the cotton-plant—that certain glands on the under side of the leaf secrete it. Now, it would add much to our knowledge if such honey could be secured in sufficient quantity to be analyzed and compared with that of flowers as well as with "aphis honey."

Prof. Gillette doubts the value of carbolic acid in keeping bees from taking poison, page 134, Mar. 1st issue. It might be observed that tarred paper, cedar, camphor, etc., seem quite effectual in keeping moths from furs; and I have found the past year that little branches of pine boughs serve a better purpose in keeping away currant-worms than frequent sprays of hellebore. I used nothing the past year but pine boughs, and the leaves were uninjured.

I was much interested in Prof. Gillette's lantern lecture on the structure of the honey-bee, p. 192, Mar. 15. I wish we had a good set of the slides, not only on the structure of the bee, but on combs, hives, and apiaries, as well as various tools and all that goes to make modern bee-keeping a success. I believe such could be used to good advantage by many during the winter season, and would add much, if properly conducted, to the education of those to whom we wish to sell honey.

SWEET CLOVER MORE AND MORE IMPORTANT.

That article on sweet clover, by R. L. Snodgrass, page 871, seems to me one of the most sensible I have ever read. He tells just how to manage to get a good stand most useful for the bees, and then enrich the soil for a grain crop, showing how to raise the clover for honey, and make it pay, at the same time, for grain and pasture. One statement he makes that should forever give it a right to a place in our country is that no other clover is such a soil-renovator as *sweet clover*. I notice in a recent number of the *Rural New-Yorker* that Mr.

Chas. B. Wing, of Ohio, who has had a large experience in raising it, claims the same.

WHY COMBS ARE GNAWED.

Mr. L. B. Smith would have us believe that bees never gnaw combs except for a supply of wax, p. 76, Feb. 1. Well, perhaps they don't in Texas; but here in Vermont I find they will tear out one side of a piece of worker comb and build drone-cells in the place of the worker-cells, just because they *wanted* to.

GRADES MIXED BY A DEALER.

Mr. Holtermann, page 70, Feb. 1, refers to the folly of mixed grading; and what he says is true; but, alas! bee-keepers are not altogether to blame. One retail dealer complained to us the past season that our honey was not graded as well as formerly. We looked the matter up, and found the jobber had been selling him No. 2 honey for our best grade.

HIVES ARRANGED IN GROUPS OF THREES.

That method of arranging hives given by Dr. Miller on page 68, Feb. 1, is well worth remembering. I moved a yard during the winter, and intend to set the hives in rows, twenty in a row, in groups of twos and threes in the rows, and with good spaces between. Then it will be easy to find any particular hive. I think there is no more danger of the bees or queen missing the hive when three stand close together than there is when there are only two; but I doubt if it is wise to go beyond this number.

THE ONLY WAY TO STIMULATE THE USE OF HONEY.

One can not help wishing that those who never will could read Mr. Orel L. Hershiser's articles in *GLEANINGS* for Feb. 15 and March 1. In the last twenty-five years we have made tremendous advances along almost all lines of practical honey production, and yet how little has been accomplished in placing our honey in the hands of consumers in the cheapest and most practical way! I believe every considerable city should have some one person whose business it is to sell honey, both to retail dealers and to consumers direct, not as his own, but as the agent of bee-keepers, and accountable to them.

From our own experience I believe the amount consumed would be increased beyond our expectations, and at prices that would gladden the heart of the average bee-keeper. Left in the hands of the commission man, what would have become of the fruit industry of California? Organized fruit-growing pays, while we of the East can eat navel oranges to our heart's content, at prices that are not prohibitive. Organization is the watchword of the times, and those who can not organize are likely to be ground beneath the upper and nether millstones.

Conversations with Doolittle

At Borodino

QUEENLESS BEES DESTROYING EGGS AND LARVÆ.

"My name is Anthony, and I live a little out from Auckland, New Zealand, where we are having our winter at the time your bees are at their best, in summer. In 'Simplified Queen-rearing for the Honey-producer' there is a passage that reads thus:

Right here I should like to make an important statement, which all should bear in mind when rearing queens. It is this: It matters little, so far as the loss of brood is concerned, what you do with a queen when you separate her from her brood. The loss in egg-laying, the death to open brood, and the removal of fresh-laid eggs, will occur to the same extent, whether a queen is placed below a zinc honey-board, caged in the hive, or put into one's coat pocket; the bees feel that they are queenless, and thousands upon thousands of future bees are lost to the colony in the removal of young brood and eggs by the bees. Never remove a queen, therefore, expecting when absolutely obliged to do so.

"Now, Mr. Doolittle, if that passage is right, a whole lot that you Americans have been teaching us in regard to queen introduction, caging queens to prevent swarming, etc., must result in a financial loss."

"I note you say *if* that passage is right. Do you think it is right?"

"I am hardly competent to answer."

"Well, unless locality makes more difference than I think it can there are very few facts that even so much as *look* toward its support. But for years I have noted that with queen-rearing nuclei, or very small colonies which have only sealed brood, if the young queen is taken away from them after she has commenced to lay, and before any of her eggs have hatched into larvæ, the bees, in many instances, will remove all or nearly all the eggs in the hive, possibly keeping from two to a dozen from which to rear another queen. I should say that in fully one-third of the cases which have come under my observation this thing has happened. Now, I can not say that this same thing would happen in full colonies, for I do not practice taking a queen away from such at this stage of proceedings; but my opinion would be that it would not."

"How do you overcome such a condition?"

"By not removing the young queen until her first-laid eggs have begun to hatch."

"Why should any one wish to take her away sooner?"

"Of course you know that the apiarist who breeds queens for sale is just as anxious for the most and quickest returns as is the apiarist who raises honey to sell. For this reason, every short cut is valuable; hence, if the eggs which the young queen laid during her first day of laying would be sufficient to keep up the population of the nuclei she emerged in and was fertilized from, a saving of three days in the time of that nucleus could be made over that in which she remained laying eggs for four days, or till larvæ hatched. Thus a saving of three

days to the queen-breeder with from 200 to 1000 nuclei would amount to hundreds of dollars during one year. With the cell-introduction plan it takes about two weeks on the average to turn out a good laying queen whose first eggs have hatched into larvæ, while, if the queen could be sent off after she had laid only one day, it would take but eleven days for each nucleus."

"But you have been talking only of eggs."

"Correct. And why I am often compelled to leave the queen till the first larvæ hatch is that, as soon as this comes to pass, *none* of the eggs are destroyed. If the eggs were removed the same after the first larvæ hatched, there would be no object in leaving the queen unless she were left until the brood from her eggs was sealed."

"Then you do not think the part about the bees removing thousands upon thousands of the young brood is correct?"

"From my experience in queen-rearing, which I have just been telling you, I can not; for, with the advent of young brood, all of the eggs are saved. And where *any* colony, from a nucleus up to the maximum colony, has young brood, I have never even once known of any of it being destroyed, if it would not have been destroyed had the queen been present. There come times, through a great famine of nectar, when the young brood will be sucked dry as a last resort, the bees looking to the continued existence of the colony; but in such a case a small part of the brood with a queenless colony would be more likely to be preserved for the rearing of a queen than with a colony that was in a normal condition with the exception of the food scarcity."

"Do you see any difference with a colony that you wish to restrict from swarming, whether the queen is taken away entirely or left caged with the bees?"

"Not along the line of the passage you quoted. After my forty-two years of bee-keeping I think that, under such conditions, neither eggs nor young brood will be removed in Central New York; and I believe the testimony of every observant bee-keeper living in North America would be the same. The difference between a removal and a caging of the queen, especially if the cage containing her is left near the entrance among the combs, would be that in the latter case very few, if any, queen-cells would be started by the bees; while if she is removed entirely the building of many queen-cells will be the result. When a lot of queen-cells are built over worker brood the bees must be shaken off before all of them can be found; and great care is necessary that all of the small ones, some of which may be no larger than capped drones, be not overlooked."

"And you think the passage quoted would not apply in queen introduction for improvement of stock also?"

"Not applicable in any case except with nuclei or very weak colonies that have sealed brood only, as I have explained. Of course, there is a loss in eggs at any time a colony is without a laying queen, but only to the extent she would lay if present."

General Correspondence

THE IMPORTANCE OF ALLOWING HONEY TO RIPEN ON THE HIVES.

**Most Honey, Removed Soon After Being Capped,
Not Equal to That Left on till the
End of the Season.**

BY W. P. SOUTHWORTH.

[On page 342, June 1, we published an article from G. C. Greiner, who advocated extracting several times during the season—not, however, before the combs were at least three-fourths capped. There is something to be said on both sides of the question; but we presume that no one doubts that honey is improved by being left on the hives as long as possible. The following article is from the manager of the Western Honey-producers' Association. It will be noted that Mr. Southworth has a number of arguments in favor of the plan of leaving honey on the hive until the end of the season.—ED.]

All bee-keepers are interested in the production of ripe honey, if they are striving to put the best honey on the market that can be obtained anywhere. This can not be done unless the honey is ripened on the hive. Bee-keepers are also interested in increasing the consumption of honey, and not much can be expected along this line until all will allow the honey to be ripened on the hive. There has been a good deal of nectar sold as honey, and the consumer who received it has noted the peculiar taste, to say nothing of its tendency to sour. He is, therefore, not anxious to buy honey again, and is suspicious of all that is offered him.

The first two years nearly all the honey came to us in small lots, and we soon noticed that there was quite a difference in the quality and density. This led to close examination and tests, and the cause was soon located. Some of the honey had been extracted too green. One such lot that was received in the fall of 1908 soon began to show signs of outgrowing the cans, and, in some cases, the cans could be heard to hiss if the day were warm and the room quiet. This honey was at once heated to see if the fermentation could be stopped. We succeeded, by warming it up well, and removing the heavy scum that gathered on top of the honey in the tank; but the flavor was ruined for table use. Two-thirds of the honey in these cans was granulated; but the part remaining liquid was very thin. This experience and many others led us at once to be on our guard against green honey. Last year we had to refuse a number of lots of honey that were offered, because the samples showed that the honey had been extracted before it was properly ripened.

We have been very much interested in the article that appeared in the *American Bee Journal*, entitled "The Two Cans of Honey," and we wish that every bee-keeper might read it, and also the note on the same subject by Mr. R. A. Burnett, of Chicago. The Agricultural Department at Washington has published a bulletin, No.

75, entitled "Production and Care of Extracted Honey," the price of which is 5 cts. I wish every producer of extracted honey would get one of these and study it carefully.

This subject of ripening honey on the hive does not apply to extracted honey only, but to quite an extent also to the production of comb honey. The delicate white sections that are removed from the hive early, and not marketed immediately, sometimes become damp in spots, drops of moisture even collecting on the cappings, and the nectar in the open cells becomes "bubbly" and runs out. These are indications that the honey, though sealed, was not perfectly cured or ripened.

The retail dealers are nearly all glad to get this delicate white honey; but if some of it ferments, the party that sold it to him will get something, when he calls again, that is not pleasant. I have had some experience along this line, both with the dissatisfied dealer and with the sour comb honey. Last season we had to melt up considerable comb honey that had begun to sour, and save what we could of it and the wax.

We can produce nice comb honey in favorable seasons, have it look nice and clean, and remain so for a long time; but we must not be in a hurry to take it off the hive nor to produce it close to old combs that have been used for some time for brood-rearing, as the bees are sure to take some of that dark wax to use in the cappings of the comb honey, especially if it is late in the season.

The climatic conditions have considerable to do with the length of time that it takes the bees to ripen honey. Last year the process was very slow in this locality on account of the continued cool damp weather. From a bulletin published by the Agricultural Department at Washington, entitled "The Chemical Analysis and Composition of Comb Honey," I note the following: "In the modification of the nectar by the bees several changes in the composition are produced. Among the most important of these is evaporation of the nectar to a water content of about 20 per cent. This is effected in the hive by the bees exposing the nectar in thin layers to the action of a current of air produced by the fanning of the wings. This evaporation is further hastened, according to some, by a process of regurgitation, the nectar being continually thrown out from the honey-sac on the partly doubled tongue, and then drawn in again until, by the movement of the air and the heat of the hive, the nectar is sufficiently reduced to be deposited in the cells of the comb.

"Another change of considerable importance which takes place while the nectar is in the honey-sac of the bee, and also probably during evaporation and storage in the comb, is the inversion of a considerable part of the sucrose in the nectar through the action of an inverting enzyme secreted by the bees.

"Another modification produced in the nectar by the bees is the introduction of a minute quantity of formic acid. This acid

is wanting in the pollen and nectar of flowers, and is supposed to be introduced into the honey by the bees just before the capping of the cells. The formic acid thus introduced by the bees is supposed to act as a preservative, and prevent the honey from fermenting."

I am a great admirer of E. W. Alexander, and have one of the copies of the little book which contains his writings, which I have read often. So far as I have had an opportunity of working out his plans I find they are well suited to the conditions existing here in this locality of the middle West with one exception, and that is his method of extracting the nectar from the combs before it is sealed or even well evaporated. In Mr. Alexander's locality, and with his equipment and methods, this process may work out; but in this locality, and with the equipment that the average or even extensive bee-keeper has, I believe the plan is worse than a failure—it is a damage to the honey-market. I am of the opinion that no producer of extracted honey should try it unless he wants to enter quite extensively into the manufacture of honey vinegar, and I doubt if the nectar will make as good vinegar as ripe honey would.

Some bee-keepers favor the frequent extracting of the green honey on account of the apparent economy, believing that it will save them something in the way of investment for fixtures, such as extra supers, frames, foundation, etc. But from an economical standpoint alone, to say nothing of the quality of the honey, I find that it is easy to prove that having the extra fixtures, and allowing the honey to stay on the hive until the end of the season, and then making a business of extracting at one time, rather than be dabbling in it at intervals during the summer, is the cheaper method, for much more time is sure to be wasted at each small extracting than would be wasted if the work were left to be done all at once.

Some argue that frequent extracting of the honey from the combs stimulates the bees to greater effort to gather more to replenish their scanty store. On this question Mr. Dadant thinks that the more stores the bees accumulate the more they will continue to gather, provided they have the combs to store it in; that is, they are not unlike human beings in that they work the hardest when they are prosperous; but if their hard earnings are continually taken away they become discouraged, and are more likely to give up trying to get ahead.

However, leaving out this phase of the question, we all know that, if we are going to extract partly ripened nectar, we must have large open tanks to put the honey in for further ripening and a suitable building to hold the tanks. A ten-frame super complete with frames, nailed and painted, is cataloged at \$1.15, and 1½ lbs. of foundation is worth in small lots 58 cts. per lb., or 73 cts., and if we add the labor of putting in the foundation at 12 cts. per super we have a total cost of \$2.00 per super. Thus if we

are fitting up for 100 colonies we have a total cost of \$200 for the one extra super over and above the equipment that we should have to have if we followed the other method. Now, I do not believe that we can purchase tanks and build a suitable house, in these days, for \$200, that will last as long as those supers and combs.

But the all-important question with the consumer is the flavor of the honey that he is eating; and if we want him to eat more honey we must give him the thick delicious honey with the bouquet of the flowers in it; and we can not get this from nectar, nor can man ripen the nectar so that it will be equal to the honey that the bees have finished. There is a big demand for good honey, and I predict that the fields will be taxed to their limit to supply this demand when the bee-keepers will join efforts in producing the right kind of honey. I do not think that the consumption of honey will increase until a good article is put on the market almost universally.

Three years ago I extracted a lot of choice clover honey which I supposed was thoroughly ripe, and I wanted to get it out of the hives before it should become mixed with the dark fall honey. This honey was put into cans and pails very soon after it was extracted, and sold. Later in the fall I was trying to sell some more honey to a man to whom I had sold some of this choice early honey, and he objected very strongly, saying that the other honey that I had recommended to him so highly had fermented, so that he had to throw it out, and he had made up his mind after this that he would buy comb honey. This is where I got my first intimation of what it means to produce real good honey. Some of that same nice clover honey that I had in the house I noticed was changing rapidly, and it soon spoiled. I now know that I can produce good extracted honey, and I know that the whole bee-keeping fraternity can do it. The people will then consume our product without complaint.

Salix, Iowa.

CHUNK HONEY NORTH AND SOUTH.

This Kind of Honey Finds Ready Sale in the South Because the Market Demands a Cheap Honey.

BY A. F. BONNEY

I have had some experience with chunk honey in this part of the world, and I have traveled to no small extent in the Lone Star State, the last time about three years ago. In 1908 and '09 I put up some chunk honey in Mason glass jars, which I sold at ten cents a pound and charged the wholesale price for the jar, or, rather, what the farmer had to pay for the jar at the store by the case—38 cents for jar and honey, offering to take back the jar at a cent less on account of the loss of the rubber. I have yet to have the first one returned.

I did not put up a great amount of the chunk honey, using only such pieces as were white and clean and could not be extracted, with a few sections which were largely drone comb and not finished. However, I am satisfied that here in the North the handy bee-man may add not a little to his income by selling section, extracted, and chunk honey, though I doubt seriously if our people can be educated to ladle the latter out of a five-gallon can.

Difference of locality has all to do with the question of chunk, extracted, or fine section honey. In Texas many of the Mexicans and negroes are allegories of poverty, though their sweet tooth is abnormally developed. They like honey, they want comb honey, but will not buy sections for lack of money, nor the extracted for fear it is adulterated. That is all there is to it. Of course the whites also buy chunk honey, just as I would to save a few cents a pound.

Of course, you may cut Texas from the map of the United States, lay it down on the map again, and find that it will cover the entire country to Canada, reach half way across the Pacific, or almost to the West Indies; but while it has an area of about 365,000 square miles it has a population of only about 3,000,000. Let us compare it with this portion of the North. Iowa has an area of about 56,000 square miles, with a population of about 2,400,000. Here in Iowa the average daily wage is at least three times what it is in Texas. To substantiate this I tell you that I have seen Mexicans setting out onions and making but 50 cts. a day, working twelve to fourteen hours a day; and the manager of the Devine drugstore, at Devine, Texas, said, when I protested, "Why, that is *good* for a Mexican."

I am not saying a thing derogatory to the great State which produced such heroes as Crockett, Bowie, and the handful of fighting devils who made the Alamo and Texas famous for all time. I am only pointing out to our over-enthusiastic big Tehana friend that size is not all there is in this world. Iowa is all fertile, but Texas is not, nor can it ever be. She has too recently arisen from the ocean. She has too much rock, gravel, sand, and too little water, for the precious fluid does not gush out in many places as it does in the park at San Antonio, at the head of the old San Pedro ditch. Were half the population of the North as poor as is half the population of Texas, we too could sell chunk honey; as it is, we sell automobiles, diamonds, and fancy section honey to our farmers.

If my memory serves me, there are not as many negroes in Texas as in Iowa; but the Spanish-speaking population must predominate over the whites, while said whites are of all nationalities, with the poorer class in excess.

To a person who has never traveled in Texas, Arizona, and other States where there are large numbers of the poorer Mexican laborers, it is hard to realize how dread-

fully poor they are. Six bits a day is big wages, and just about double what they earn in Old Mexico. Had the North the comparatively scanty population Texas has, and the relatively large proportion of *very* poor persons, we, too, would, I do not doubt, be very glad to sell chunk honey as cheap as they do in Texas.

Along the Big River of the North the Texan bee-keeper comes in competition with the cheap Mexican honey. It is cheap, but not always poor in quality. I have bought it for five cents a pound—good comb honey in ollas, which afterward serve as water-jars.

Buck Grove, Iowa, May 6.

A CASE OF APPARENT DYSENTERY AFTER SEVERAL WEEKS OF FINE WEATHER.

Is it Bee Paralysis?

BY CATHARINE BEATTIE.

I am completely puzzled by the conditions surrounding one of my colonies, and wish to know if some one can give a solution of the difficulty. There is evidently some disease that destroys the adult bees in great numbers while every cell of brood remains perfectly sound. It is evident, too, that the disease is some form of bowel trouble, for the bees are spotting the bottom-board of the hive badly. Can it be dysentery? We have had three or four weeks of beautiful weather, when the bees could fly every day.

Thinking the trouble might be caused by the honey which was gathered last autumn, I extracted all of it and fed sugar syrup. At present, and for the last two weeks, these bees have had nothing but this syrup to eat in addition to the nectar which they have been gathering almost daily. Still, the trouble has not lessened, and the hive is now almost depopulated. It began as long ago as last January. At first there was no indication of the bowel trouble, though bees were dying in great numbers outside the hive.

Many of the bees, although not all of them, have greatly swollen abdomens, which are so much elongated as to give the appearance of a queen. There is a great and continuous disturbance around the entrance, the bees apparently fighting and throwing each other from the alighting-board. Sometimes those thrown off are plainly disabled and sick, while others fly away as if nothing were the matter. At first I thought it must be a case of robbing; but the bees around the entrance acted somewhat in the distracted manner that bees just queenless do, although the queen was present and laying, and every cell of brood is all right. Is it bee paralysis? If so, do you consider it safe to use the combs and save the brood, as Mr. Poppleton, of Florida, advises?

Later.—No one is spraying fruit-trees anywhere near; in fact, there is no fruit in the

vicinity; besides, the trouble began in the latter part of January, before there was a blossom of any description.

The bees at present are working on white clover, but they began on this only ten days ago. Previous to that time, I am confident that the only source of nectar was from the jewberry blossoms, a plant much like the blackberry, the fruit, however, being larger and more sour. All of the honey in the hive is very light in color and perfectly clear. Furthermore, it all has a delicate and delightful flavor.

Just recently another colony has become affected, but not yet so violently as the first; but I notice some swollen bees, with abdomens much elongated like small laying queens, in this second colony. No bowel trouble has developed so far; but there is the same continuous fighting and uproar around the entrance as at the first colony. This is one of the most marked features of the trouble—so much so that I am suspicious of a third colony where I have begun to notice a few bees fighting. There is no robbing.

The bowel trouble, which has not yet appeared in the second colony, seems to have ceased in the first, although the bees continue to die in great numbers, which loss, were it not for an unusually excellent queen, would have run the colony down to nothing.

My own idea is that the trouble is bee paralysis. Many of the bees are abnormally black and shiny. Both colonies are hybrids—about half-blood Italians. I believe that I notice a tremulous motion in the bees that crawl in the grass, unable to fly. The queen in the first hive has been caged ten days, and to-day I sprinkled the bees and combs with sulphur. Not knowing the nature of the trouble, I feared to distribute the brood among other colonies, although every cell of it is sound.

Thibodeaux, La.

[From all the evidence presented it seems reasonably clear that the trouble is bee paralysis. Yes, you can use the combs over again.

We would advise isolating the two colonies affected, and then follow out the Poppleton treatment as given in the A B C and X Y Z of Bee Culture, or our booklet, "Diseases of Bees."—ED.]

BUCKWHEAT-GROWING IN THE OZARK MOUNTAINS.

BY OTIS A. GRIFFITH.

I live in the heart of the Ozark Mountains, and I am a crank about buckwheat-growing. I sow my first crop the 10th of May, and then cut it about the 15th of July. After this I plow and sow again as soon as possible. The second crop does not always produce nectar. On the average I get about 35 bushels of grain per acre from the first crop, and about 25 from the second crop.

Buckwheat is a fine fertilizer, as it leaves the ground in much better condition than does red clover or cow peas. For years I have tried to get my neighbors to raise buckwheat, and I am always ready to give away seed; but the people who have always lived here seem to think that bees will take care of themselves out in a hollow log or any place else.

Nearly all of my neighbors keep a few colonies in log gums; and when the logs "get rich," as the expression is, they knock the top off and take out every thing, down to the cross-sticks. The people here work about four months out of the year, and fish and hunt wild game and wild bees the rest of the season. They are good-natured, and their wants are so few that they are the happiest people on earth. Every man owns his own place; each one has a rifle and a good squirrel-dog, and a fiddle with a horsehair bow.

This is the natural home of wild bees. I keep 100 good strong colonies which yielded 90 lbs. each last season. There are many different kinds of natural honey-plants that grow wild in the mountains.

Scholten, Mo.

ANOTHER FAILURE IN VIEW FOR CALIFORNIA BEE-KEEPERS.

BY M. H. MENDLESON.

There will be another failure in the honey crop in Southern California this season. We are having ideal weather for a honey-flow, but conditions are against us. The first part of the winter we had favorable rains until January and February to nearly March 15, which was a scant rainfall. The soil dried down sufficiently to check and dwarf badly the growth of the sages, and especially the alfilaria and other small producing flowers, the latter of which generally stimulates and builds up colonies for the sages. This dry spell checked breeding. Then came a good rain in March and some in April. Hot east winds followed, shutting off all prospects. What little swarming we have had will not fill up for the winter, and colonies that were left with abundant stores last fall will probably fill up for the winter. My scale hive has gained only about 7½ lbs. in a month; and should another east wind come, those that left their bees with limited stores will have to feed. These same conditions exist south to San Diego Co.

With all these bad prospects, buyers are still trying to press down prices, and it is time that we put a stop to this work.

Ventura, Cal., May 10.

WEAK COLONIES BUILT UP BY HAVING STRONG COLONIES PUT OVER THEM.

In the Alexander plan for making increase you recommend putting the strong colony underneath and the weak on top. I have tried both ways and I have much better success when I put the strong colony on top and the weak one underneath.

Coyle, Okla., March 15.

ARTHUR RHODES.



CONCRETE FOUNDATIONS FOR TWO HIVES, MADE WITHOUT MOLDS OR FORMS.

A PRACTICAL AND EASY WAY FOR MAKING CONCRETE HIVE FOUNDATIONS.

BY CHARLES RIVERS.

As there has been some discussion in regard to cement blocks to prevent the growth of grass and weeds around hives I take pleasure in sending a picture of my apiary, as I have had some of the cement foundations in use for the past three years. They do away with all kinds of annoyances around the hives; toads can not find a hiding-place, and if you take a frame out of a hive and stand it alongside it does not have grass, weeds, and spider-webs sticking to it when picked up. If you get busy, and the grass gets the start of you, the bees still have a clear alighting-place.

If the bees are wintered on summer stands, and the snow is deep, it is easily cleared away when there is a day warm enough for bees to fly.

I make the blocks five feet square, and they are plenty large for two hives. I cut away two or three inches of soil and fill in with cinders or sand, making it level from side to side, and two inches higher at the back than the front. I use $1\frac{1}{2}$ sacks of cement to 3 of coarse sand; mix well dry; use water to make a thin mortar, and spread with a mason's trowel. The block will be $1\frac{1}{2}$ inches thick, and will not crack if tempered right. The best way to temper them is to cover them with straw or green grass after the cement begins to set, and sprinkle well with water once a day for five or six days.

Mendota, Mo., April 19.

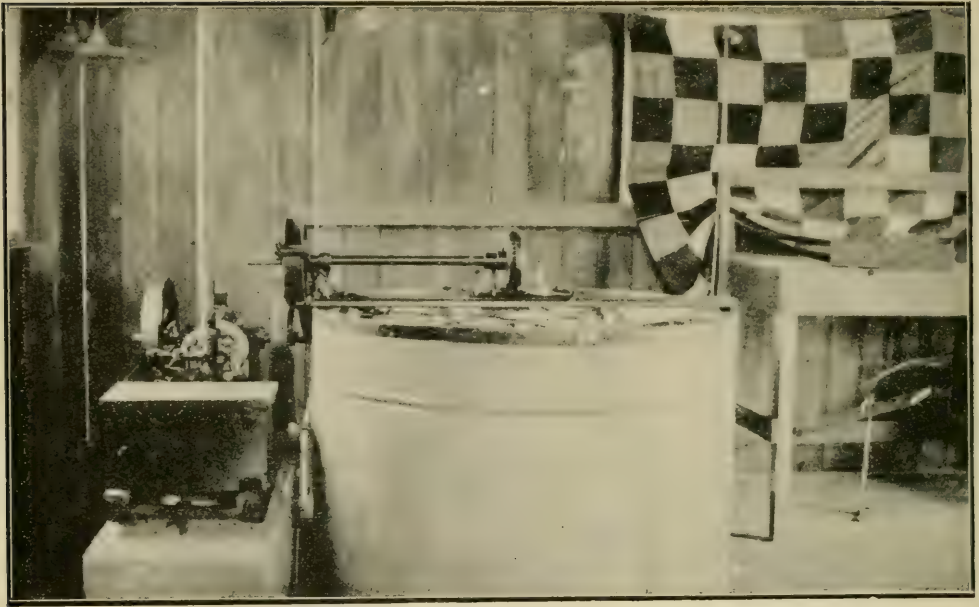
[This way of making the blocks saves material and labor. The cinders should be well tamped and wet down before the concrete is spread on. No forms are necessary; and as soon as one place is finished, another may be begun.—ED.]

AN IDEAL ARRANGEMENT FOR A POWER EXTRACTING-OUTFIT.

BY E. M. GIBSON.

I enclose a picture showing a corner of one of my honey-houses in which an extracting-outfit is located. I think the arrangement will appeal to all who contemplate using such an outfit. It will be noticed that the engine stands nearly as high from the floor as the top of the extractor, which is much more convenient to work with than if it were on the floor. The portion of the visible foundation on which the engine rests is concrete; and the rest, which extends to the cellar bottom, is rock. The heavy iron reaching across the end of the skid has a bolt through the center, which is five feet long, extending down into this rock foundation. There is one of these at each end; and when the taps are screwed down tight one can scarcely feel a tremor when the engine is working. This, with the exhaust-pipe extending through the roof, instead of allowing the explosion to exhaust in the house with its accompanying noise and gasoline smell, makes it much more pleasant in the room.

The white streak shown in the picture, passing up from the idler, is a cord which is



E. M. GIBSON'S POWER EXTRACTING-ROOM.

The starting, stopping, and reversing are accomplished by means of foot levers operated by the uncapper's foot.

fastened to the idler. It runs over two pulleys, such as are used for window-weights, one placed directly over the point where the cord is fastened to the idler, and the other over a point where it is fastened to a foot-pedal which is shown under the uncapping-table in easy reach of the operator's foot. The pedal can be worked almost instantaneously, while both hands may be busy with other work. The ratchets by which the tension of the belt is adjusted do not show in the picture. As soon as time will permit I am going to attach a foot pedal to the brake also, which will enable one to finish a set of frames without stopping his other work, which will be quite a saving of time.

With the kind of foundation here described, and with the engine resting perfectly level, it can not fail to last much longer than one having no foundation. Indeed, I think an engine set level and solid, and if used only for running the extractor during the honey-flow, and well cared for in other ways, will last as long as the average man will need one; and instead of the work being hard and drilling, it is made very light and pleasant; and with a good man outside and an intelligent boy or girl in the house, a large crop of honey can be harvested.

TOO MUCH VENTILATION NOT SAFE IN CALIFORNIA.

I want to sound a note of warning to California bee-keepers and others who keep bees in climates where the nights are as cool as they are here, about too much ventilating of hives. So much ventilation may be all right in sections of the country where

the nights are as warm as the days; but in portions of the country where one needs a warm covering every night during the summer, a $\frac{3}{8}$ -inch entrance the full width of the hive is sufficient, with a sunshade to cover them well, and extending one foot in front to shade the alighting-board.

By the way, the entrance should front toward the east on this coast, as the prevailing winds are from the west, and bees can not alight flying with the wind if the wind is strong. Occasionally we have an east wind which is usually very strong; and the bees coming in are carried to the back of the hive, waiting for a lull, when they can steal around the corner. Those which do try to fly straight into the entrance do not alight but tumble in.

Returning to the subject of ventilation, I would say I have tried every means of ventilating that I have ever read or thought of, and they have all proven failures with me; and I have tested the matter so thoroughly that I believe they would prove failures in any locality where the nights are as cool as they are here; and for the same reason I would especially caution beginners about spreading brood *a la* Doolittle in sections of the country west of the Rocky Mountains. In fact, I question the wisdom of such a proceeding in any locality. The queen seems to be as anxious to build up in the spring as the bees, and she displays excellent bee sense; for as fast as the young ones hatch she again lays eggs in the cells so as to keep the brood-nest as compact as possible, showing no disposition to spread beyond

the capacity of the bees to cover; but as fast as they increase in numbers she enlarges the circle of eggs, and the same number of bees can keep more brood warm when compact than they can if scattered. As a rule, the bees will fill the empty combs inserted, with pollen and honey. From the fact that queens do keep from eight to ten frames filled with brood for months at a time is conclusive evidence that they do not need any forcing or coaxing by man.

**"ONCE A ROBBER ALWAYS A ROBBER"
NOT TRUE.**

When nearly through with a tour of inspection of my apiaries a few days ago, to determine if the queens were doing their duty and if the bees had plenty of stores, they began robbing. I had been working with them two or three days, and they had not shown much disposition to rob, and perhaps I got a little careless and left some honey exposed; and when they did start I never saw bees more persistent. It was too warm to close the entrances entirely, and the robbers worked their way through any amount of straw, so I covered the hives with pieces of canvas while I made a robber-trap as explained by the editor, page 116, Feb. 15. I put three frames of honey in a hive after mutilating the cappings, and put two other hive-bodies on top of it, and, sure enough, I soon had them all in "durance vile." I did not have the heart to kill them, but let them out just at sundown, but warned them (mentally) that if they came "pesticatin'" around in the morning they would get sulphured; but they did not

come—at least only a very few came, and began to show a disposition to rob at one of the hives they had got into the worst, and I placed the trap close to it and went on with my work, and had no more trouble, and but very few robbers were in the trap when I opened it the second night. This would seem to disprove the statement of "once a robber always a robber."

Jamul, Cal., May 5.

THE SOLAR WAX-EXTRACTOR GIVES WAY TO THE WAX-PRESS.

BY H. R. BOARDMAN.

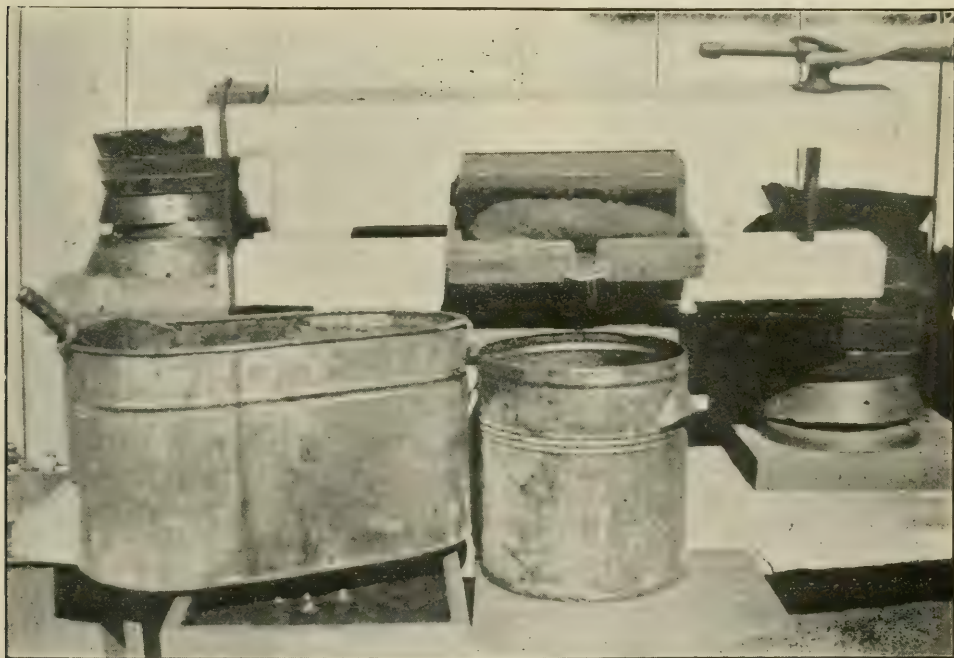
[The writer of this article, the originator of the Boardman solar wax-extractor, while he does not by any means think that there is no longer a place for the solar extractor, has found that the press is much superior for old combs.—ED.]

I have become deeply interested in wax-production, not only as a bi-product, but as a possible special industry.

I propose at this time to present to the readers simply a press which I have used for some time in rendering wax, and which has been eminently successful.

THE PRESS.

It is simply two strong wooden arms with a common carpenter's bench-screw at one end, and a strong iron loop over the other end, adjusted to the height of the screw by wooden blocks. It is very simple and quickly constructed, and easily and rapidly manipulated. It gives great power, which may be increased by sliding the cheese nearer



H. R. BOARDMAN'S WAX-PRESS.



H. W. SUHRE READY TO START FOR AN OUTYARD.

to the loop, and at the same time it can not tilt over sidewise upon the screw as with the direct press. With the hand that turns the screw, the press may be easily tipped or tilted forward to any angle to allow the melted wax and water to run off into the can.

The picture represents the press as I use it, the wax being pressed out in the usual way. In front is the can to catch the melted wax. At the left is the boiler in which the comb has been melted on a stove near by. Near one end of the boiler is the dipper stuck in the handle. A section of the rim is straightened, giving a straight dipping edge. At either end of the press may be seen some of the finished product.

TO USE THE PRESS.

The top arm is removed for convenience, and a piece of strong burlap, reinforced by a smaller piece if necessary, is spread over the lower form of the press, and sufficient melted wax with plenty of water is dipped on to it from the boiler. The burlap is folded snugly over it, the press adjusted, and the wax pressed out at once while hot. Both the upper and lower forms of the press are slatted to allow the wax to run through.

Small pressings, about the amount of 8 to 12 frames of comb, have given the best results. Combs in frames that are to be rendered are put into the boiler, the cover put on, and the wax boiled, and steamed. I have boiled and pressed the refuse the second time, but I do not think it pays.

Collins, Ohio.

[The construction of this press resembles the latest press that Mr. C. A. Hatch used,

with the exception that Mr. Hatch had a screw at both ends. The advantage in this would be that the beams could be kept parallel so that one side of the cheese would not be thinner than the other.—ED.]

RAMBLER AUTO USED FOR HAULING HONEY.

BY H. W. SUHRE.

I should like to give my experience in driving among the bees with a sting-proof horse. I have two outyards, and one yard at home; and for the last three years I have been visiting them with a two-cylinder 22-horse-power Rambler auto. I should like to advise all bee-keepers who have outyards to use autos. For my part I should not like to go back to the horse-drawn vehicle. I have my car arranged so I can haul 36 4¼-inch section supers, as the illustration shows. I can also use my car for five passengers by taking off the box and replacing the tonneau.

I find the metal spacers very satisfactory. I have put them on all my frames.

Brookville, Ind., March 21.

CAGING THE QUEEN TO MAKE A SWARM STAY HIVED.

BY CHRIS. GRIMOLDBY.

I notice on page 498, Aug. 15, last year, Mr. C. S. Ford says he had trouble in keeping his swarms hived, and the editor advises putting them down cellar for several days.

That will make them get down to business all right; but if there are many to put down cellar it means a lot of lost time right in the honey-flow. Now, my way is this: If a swarm will not stay hived I cage the queen and keep her caged for 24 hours on top of the frames or sections, whatever it may be; and at the end of that time I go to the hive, take out the frame of brood, and if any cells have been started I destroy them, shake a few bees in front of the entrance, and let the queen run in with them. This cures them for the rest of the season if they are given plenty of storing room.

Owen Sound, Ont., Can.

WHY IT DOES NOT PAY TO GRADE COMB HONEY CARELESSLY.

BY H. H. ROOT.

A few months ago we bought a car of comb honey from a dealer who supposed it was graded. When we opened some of the cases we found practically no attempt at grading, as shown by the illustration of eight sections, which, if we remember correctly, came from the same case. Probably none of this would have answered for fancy; but at least two of the sections might have gone for No. 1, and perhaps two more as No. 2, but why any bee-keeper wanted to put the other four sections in with the same lot is more than we can understand. Three of the sections in the upper row and the one at the left of the lower row should certainly have been sold as culls, or as bulk comb honey. The bee-keeper who indiscriminately throws together in the same case good and bad sections, is likely, instead of getting the fancy or No. 1 price for the good and bad, to get No. 2 or even a lower price for all the honey,

some of which, perhaps, could have brought a much better price if it had been separately graded.

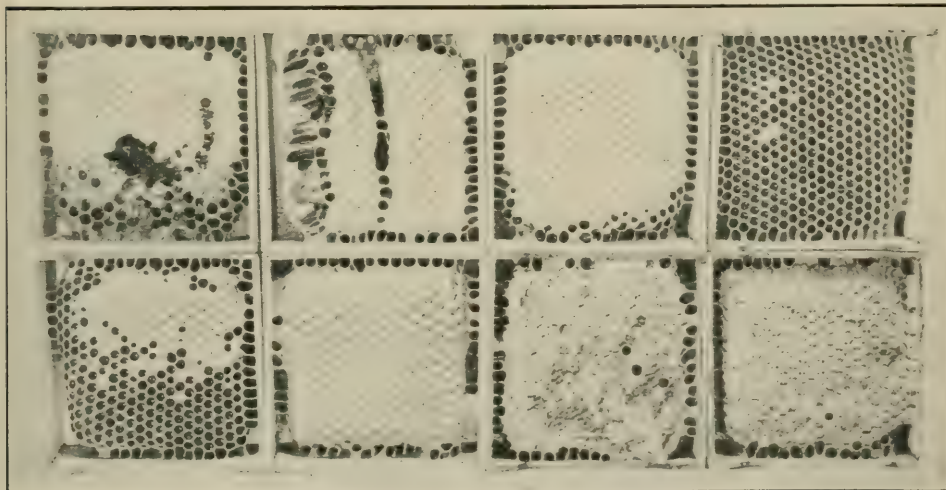
When a buyer gets hold of a lot of honey like this he is very apt to make up his mind to look elsewhere for his honey the next time, and the bee-keeper can hardly blame him. Injudicious grading means low prices every time.

ANCIENT EGYPTIAN BEE-KEEPING.

BY H. J. O. WALKER, LT. COL.

Mr. Fluharty is to be congratulated on the imaginative sketch that makes the cover of GLEANINGS for January so especially attractive. To come down to hard facts and your explanatory note on page 34, I should like to know where can be seen "the paintings upon the walls of their tombs and other edifices" that depict the ancient Egyptian art of bee-keeping; or if they can not be seen where are they even described? Not, I think I may positively say, in the British Museum nor in the museums of European capitals that I have visited—not in quest of such paintings, perhaps, but ready to mark them. Nor have I read of any instances except the following passage in Sir Gardner Wilkinson's *The Manners and Customs of the Ancient Egyptians*: "To the garden department belonged the care of the bees, which were kept in hives similar to our own (I remember to have seen them so represented in a tomb at Thebes)." As this book was written in or before 1837 it is almost certain that the vessel taken by the author for a bee-hive must have been in the form of a straw skep.

It is far more probable that, from the oldest times, Egyptian bee-keepers used the cylindrical hives made of clay or Nile mud



AN ILLUSTRATION OF SOME STRANGE GRADING.

These sections represent a considerable number classed as No. 1 in a car of honey.

and horse dung, with the addition, sometimes, of ashes, which are still fairly common in Egypt, Palestine, and other Eastern countries. In GLEANINGS for May, 1890, Mr. Baldensperger describes two apiaries near Alexandria, both of which had hives of this description. In one of these were 600 in six rows laid horizontally above each other. The keeper of this apiary held strictly, as he boasted, to the customs of his forefathers, and in his younger days used to pack his hives in boats and take them down a canal to the Nile, where he moved them gradually to fresh pasture grounds. This is known to have been an ancient Egyptian custom. It was practiced also in Italy and France. We may reasonably assume that the ancient Egyptian hive was of the kind just described.

I see no reason for supposing that Egyptian methods were any thing more than primitive. We only know that honey and wax were used in considerable quantities and for various purposes; that a vessel supposed to be a honey-vase occurs in Egyptian inscriptions, and that a commonly depicted emblem of sovereignty was the image of an insect which most bee-keepers will be ready to accept as the conventional representation of a queen-bee, known to the ancients merely as the ruler of the hive. Sir Gardner Wilkinson held that it was a hornet or wasp, and I found on inquiry that Mr. Wallis Budge, keeper of Egyptian and Assyrian antiquities at the British Museum, takes the same view, although, in my opinion, on quite insufficient grounds. In any case the recognition of a special kind of bee as being usually present in a hive does not take us very far.

There remains the old fable of the generation of bees from the decaying corpse of a bullock, credited to the Nile delta by the poet Virgil, which only tends to show how little was really known in those days of this land of mystery. That bees were domesticated in Egypt from very ancient times may be readily granted. If any evidence, pictorial or of other kind, exists to show that the bee-keepers' craft had advanced beyond the quite primitive stage I shall be glad to hear of it.

Leeford, Budleigh-Salterton, Eng., Mar. 2.

CARTONS FOR HOLDING CANDIED HONEY.

Honey About to Granulate Poured into Paper Cartons Lined with Honey-proof Parchment.

BY THOS. SUTHERLAND.

The illustration shows a small packet of white-clover honey put up in cardboard, which has a lining of vegetable parchment. This I have patented and put on the market in this country, and it is popularizing and increasing the sale of honey in the most surprising manner.

This package is intended to hold liquid honey in the first place, although on account of the fact that the honey should be run in-

to the cartons just before it is ready to candy it does not remain in the liquid state very long. If these cartons are closely packed in boxes holding two dozen, the honey solidifies perfectly, and the cartons require only sealing and repacking in other boxes to be ready for market. It has always appeared to me that candied honey cut up into pieces and slipped into cartons, or wrapped in parchment, however carefully, will never have the taking appearance of these cartons that I have mentioned when filled with liquid honey which is allowed to solidify.

Blocks are used for the forming of the cartons, which work should be done, together



CARTON FOR CANDIED HONEY.

The honey is poured in just before it solidifies; and when solid the carton is sealed ready for market.

with the labeling, before the blocks are withdrawn, and then two dozen each may be packed in the stock boxes and held awaiting the honey harvest.

One might think that the filling of the parchment-lined cartons under a honey-tap rather risky and uncertain, due to the probability of honey getting down between the lining and cardboard, and also on account of the difficulty of lifting and moving a frail but heavy open-ended carton; but I use a small, strong, funnel-shaped arrangement which drops inside of the carton to a depth of 1½ inches and pushes the lining to either side out of the way. I also have two hinged wings which clasp the outside of the carton, making the lifting with the fingers and thumb a very safe matter; in fact, I find the filled carton just as easy to handle as a bottle or can, and occupies far less space for storage or in transit. Lastly, my experience is that they sell like hotcakes.

Rangiora, N. Z.

VENTILATING TO PREVENT SWARMING FROM OLD BOX HIVES.

The Plan Followed Years Ago.

BY DR. S. P. SCHROEDER.

I am thoroughly convinced that plenty of ventilation reduces the swarming tendency to a minimum. I am now in my fiftieth year, and my father was a bee-keeper before me. He used to raise the old box hives by putting an inch block under each corner, and we always found that colonies so treated stored more honey and swarmed less.

It is my opinion that the reason well-ventilated colonies swarm less is mainly that the air is drier; and I have observed that, in dry springs, bees swarm less than in wet springs—due, I think, to their wonderful instinct. Dry seasons are not conducive to the growth of abundant vegetation, and by instinct the bees know that the chances for a long continuous flow are not good; hence they store their honey away. If it rains often, on the other hand, they know that there will be an abundance of nectar in the future, consequently they get the swarming fever. I know that this is contrary to the old idea, which was that bees swarm more often in rainy weather because they are idle part of the time; but I reject this notion, on the ground that in the dry regions of the West bees swarm but very little whether they are idle or not, and in our dry springs this is true also.

Good bottom ventilation reduces the amount of moisture in the hive to a minimum, and puts the bees in nearly the same condition that they are in the arid regions of the West.

Every one has seen the pool of water on the alighting-board of a strong colony on a cool spring morning. The fanning of water from the nectar is one cause. If the ventilation is poor the air inside the hive gets saturated with this moisture, and the bees are placed in the same condition that all colonies are when it rains abundantly, hence they go to swarming. The well-ventilated colony is in this condition only while it rains, as at other times the air is dry.

We have a neighbor who keeps a few colonies in the old way. Years ago he conceived the erroneous idea that bees pulled the moths out and allowed them to fall on the bottom-board, and that the moths would then crawl back on to the combs. Accordingly, he made his hives 12 inches square and 14 inches high; and the bottom-boards, hinged underneath, enabled him to drop them down so that his hives could hang about 3 ft. above the ground. The colonies, while they had all this ventilation, swarmed but little. He used to place two ten-pound boxes on top of these colonies, and the bees would sometimes produce as much as 60 lbs. per colony in one season. In some cases comb would be built down under the hives as far as 12 inches, so that the bottom-boards could not be folded up in place all winter.

In spite of this the bees would come out strong in the spring. The hives were kept under the south side of a bee-shed.

This all goes to show that plenty of bottom ventilation reduces the swarming propensity, and at the same time allows the colony to be kept strong.

Nashville, Ill.

WHY PLenty OF VENTILATION KEEPS DOWN SWARMING.

BY JOE BLUNK.

On page 691, Nov. 15, Dr. Miller says that when he "zigzags" his supers his colonies do not swarm. This is plain enough; for with his two-inch entrance below, and the additional openings above, he has established a natural circulation, all the foul air escaping above long before any harm has been done to the bees; consequently they have all the fresh air they care for. Heated air becomes lighter in weight, and it therefore rises and escapes through the upper opening.

If there is only one entrance at the bottom the circulation, of course, is so sluggish that at times the air stops moving entirely; and after the bees have breathed it over and over it becomes foul, and it is then that the effort is made to increase the circulation by the rapid movement of the wings, known as fanning at the entrance. Some of the bees begin to get sick (may be their heads ache, as mine does after being all day in the foul air of the mine), and so they go outside, and hang on the front of the hive. After a while some more join the bunch on the outside, and they may stay all night, although a cold rain may have come up meanwhile.

When the condition of foul air keeps up too long, the bees become discontented and swarm. None of my bees hang out, nor do any of them fan at the entrance. My two-inch bottom-boards, with both ends open, p. 229, April 15, 1909, create this condition.

Moorland, Iowa.

COLONIES SWARM LESS WHEN HIVES FACE THE NORTH.

I have tried raising the hives to permit a greater circulation of air, and I find that it works all right in comb-honey production. Furthermore, I notice that those hives that are turned so that the entrances are to the north (this being the direction from which the most of our winds come) are the ones that do not swarm. Furthermore, I have no trouble if I shove the brood-chamber along on the bottom cleats so that there is an entrance at both ends of the hive.

A SHORT CUT IN FOUL-BROOD TREATMENT.

All who are troubled with foul brood should try shaking their bees into a nail-keg, small box, or any old receptacle that has had a piece of brood-comb placed in it, just as if a swarm were to be hived. Let the bees stay in such box until they have emptied themselves of the diseased honey, then put them back in their old hives on full

sheets of foundation or starters. Why not make a short cut in this way, and save time, foundation, hives, etc.? The old boxes or kegs could be burned afterward.

Campbell, Cal.

M. I. PHILLIPPE.

BLOCKS UNDER HIVES DO NOT ALWAYS PREVENT SWARMING.

From my experience along the line of putting blocks under hives, away back in the year 1852, I think that those who rely upon this plan as a preventive of swarming are doomed to disappointment when conditions are favorable for swarming. In those days we had no frames nor modern hives—nothing but the log gums or square boxes, and the great bugaboo was the wax-moth. It was claimed that the raising of the hives off the bench by blocks placed under the corners would cause the moths to collect under the blocks so that they could be destroyed. Although I had good large box hives, my bees swarmed just as much as those that were left with only the common entrance.

Elwood, Kan.

L. G. PURVIS.

THE PHYSICS OF CONTRACTION.

BY LEO E. GATELY.

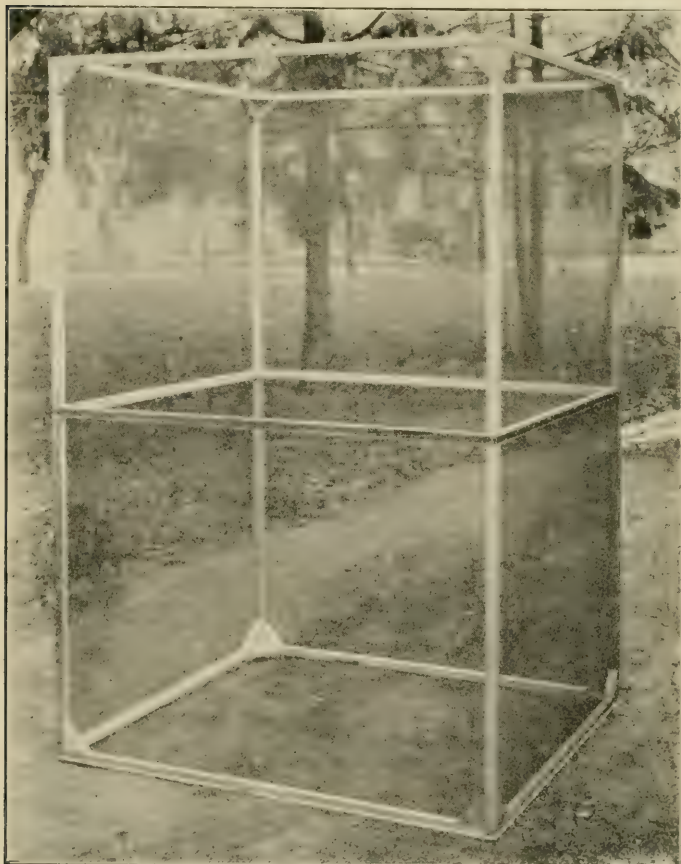
Notwithstanding the repeated and forceful attacks upon this method of inducing or compelling bees to store their product where it may be available for other purposes than mere bee-food, I am disposed to view the subject in a vastly different light. In a great many if not the majority of localities, some form of contraction is indisputably a necessary essential to insuring satisfactory super work. With any amount of nectar coming in, and with skill unlimited, it is practically impossible to attract the bees into surplus receptacles so long as they have empty combs below.

A perfectly feasible but rather laborious method, accomplishing the object but eliminating the necessity for contraction, consists, when supering, in exchanging combs of brood from poorer colonies for empty combs that the honey-producing ones may have. A better plan is to have some system that will always result in getting the honey where it is wanted, without handling combs.

Swarms or new colonies placed in large brood-chambers and left to fill them before sections are given can hardly be expected to furnish any surplus in the best of years. Natural swarms should always be hived in contracted brood-chambers upon the original stands and supers that may have been upon the parent colonies soon after shifted to them. By so doing, super work will be uninterrupted, and a surplus secured equal in volume to that which would have been obtained if no swarming had occurred.

Up to the time of supering, the queen ought to be given unlimited room to secure all the brood obtainable. Just previous to giving surplus receptacles, brood-chambers can be reduced to a single tier of frames, and again enlarged when the harvest is past.

Those having used a hive with a super wider than the body, jutting out past the sides of the brood-nest, have undoubtedly noticed the partial or perhaps



A NEW AND LIGHTER FORM OF ANTI-ROBBERT CAGE WHICH HAS BEEN USED IN MEDINA. SEE EDITORIAL, P. 367.

complete neglect paid to the sections resting over wood instead of the combs. Clearly, then, the only logical method is to contract from the top, without reducing the supering surface of the brood-nest.

With a hive in which the brood-chamber is horizontally divisible, having two or more sets of shallow frames, contracting to the desired capacity necessitates only the removal of one of the hive divisions. There is little labor and complication connected with this method, and the extreme shallowness of the remaining hive division will seldom fail to throw at once the entire working force of bees into the surplus boxes. In this respect all brood-chambers consisting of but a single tier of frames are, to say the least, fundamentally deficient.

Severe contraction may, at the end of the season, result in small and inadequate colonies, and the course usually pursued is to enlarge again the brood-nest in sufficient time for the bees to build up for winter. Again, contraction is occasionally employed as a means of preventing or decreasing the production of brood when the workers would come to unseasonable maturity, thus becoming consumers. If colonies are greatly weakened at the end of the season through excessive contraction they can be united.

When desirable, either because of its cheapness or owing to its superiority as a winter food, contraction can be so managed as to leave the bees practically destitute of stores in the fall, and sugar substituted.

Ft. Smith, Ark.

THE EFFECT OF ODOR AND COLOR ON BEES.

How Insects have Altered the Flowers; Highly Flavored Honey Comes from the Strong-scented Flowers; Bees do Not Prefer any One Color, though they are Attracted More by Dark Shades.

BY PH. J. BALDENSPERGER.

[One of the most interesting features of GLEANINGS during the '80's consisted of the contributions of Mr. Baldensperger to its columns; but since 1893 he seems to have disappeared till now. In fact, the writer had almost forgotten him when he noticed a reference to him in Mr. Walker's article on page 383. By a strange coincidence, I was reading that reference to Mr. B. in that article when the junior editor brought me the manuscript of the following letter, asking me if I could tell what "Ph." stood for or if I could read it at all. The manuscript reminded me of the face of a long-lost friend or of a forgotten passage of music in a symphony.

Mr. Baldensperger seems to have lost none of his former interest in bees, nor of his ability to infuse others with that interest. He was one of a German family that went to Syria about 1860, and there he became interested in bees, as he here intimates.

About the last news we received from there was that Mr. B.'s brother was drowned at Jaffa while bathing in the Mediterranean Sea. About 18 years ago Mr. Baldensperger went to Nice, France, where he has remained in retirement so far as we could learn. The painstaking care peculiar to the Germans permeates all of Mr. Baldensperger's writings, and renders them not only worth reading but worthy of study.—STENOGRAPH.

All progress in nature has been accomplished by the meeting of two distinct individualities—time and place, transporter and

receiver. They all work together in harmony. One individual displays all in his power in attracting the attention of the other, and progress is the result.

By this law the innumerable plants extant have developed into what they are now. Insects have been the great agents for this development; and without them flowers and plants would have remained stationary with little or no perfume, depriving man of the manifold joys of modern horticulture. Insects, forced by the necessity of preserving their kind and enlarging their field of investigation, were the first horticulturists, and for centuries prepared the way and indicated the most delicate operations necessary to obtain new varieties.

Flowers attract insects by color and by perfume, and in return they fertilize plants and unconsciously cultivate flowers for their own use the next season. By these visits flowers have altered their form and hue in the course of centuries. It is they, too, that have given us the divers forms of fruit, and how is man thanking them in return? By the basest ingratitude—some, at least; for, be it said to their praise, many fruit-producers now protect bees; others persecute the bees and insects, which are charged with all depredations in the orchards without investigation.

It has been stated that Europe has about 4200 different plants, 420 of which are employed for commercial uses.

Only 3000 are said to have flowers, and these are classed as follows according to colors and perfumes:

1124	have white flowers with 187 odorous.
951	“ yellow “ “ 77 perfumed.
823	“ red “ “ 84 “
594	“ blue “ “ 34 “
308	“ violet “ “ 13 “

Happily for bee-keeping in general, as well as for humanity at large, these flowers neither blossom all at once nor do they grow in the same place; moreover, they are not equally distributed over the continent.

For us bee-keepers the most interesting are such flowers as produce honey and pollen in due season; and I can speak about only such flowers as have come under my observation in the Alpine region which I have more particularly studied in the last eighteen years.

I here give such flowers as are more profusely distributed, neglecting the minor ones as being too tedious to follow in the scope of an article. I give the principal colors, as there are many hues between violet, lilac, and blue or rose, and classify them by numbers, beginning with the least represented, and writing in italics the names of such as are more apt to produce pollen. We have only one representative of the red color; three lilac, three violet, eight blue, nine rose-color, ten yellow, fourteen greenish-white, and fifteen white ones.

The greenish-white and white ones have very often such a small difference that I can fairly say half of our Alpine honey-plants

are white and the other half of other colors. Here they are:

Red, 1; *poppy*: *papaver rhæas*.

Lilac, 3; *margosa-tree*: *Azadirachta indica*; *thyme*, *thymus vulgaris*; clover, *trifolium*.

Violet, 3; *agnus castus*, *bites agnus castus*; *peppermint*, *mentha piperita*; *mellilot*, *mellilotus officinalis*.

Blue, 8; *rosemary*, *rosmarinus officinalis*; *French lavender*; *lavendula spica*; *borage*, *borago officinalis*; *viper's bugloss*; *borago officinalis*; *common sage*, *salvia officinalis*; *thistle*, *carduus*; *common lavender*, *lavendula vera*; *endive* or *chicory*, *cichorium intybus*.

Rose-colored, 9; *dog-rose*: *rosa canina*; *heather*, *erica*; *peach-tree*, *amygdalus Persica*; *apple-tree*, *pyrus malus*; *quince-tree*, *cydonia vulgaris*; *sainfoin*, *onobrychis*; *lucerne*, *medicago*; *rock-rose*, *cistus creticus*; *radish*, *raphanus sativus*.

Yellow, 10; *prickly pear*, *opuntia vulgaris*; *broom*, *genista*; *dandelion*, *leontodon taraxacum*; *mustard*, *sinapis alba*; *great mullein*, *verbascum thapsus*; *vegetable marrow*, *cucurbita maxima*; *marigold* or *pumpkin*, *calendula officinalis*; *rocket*, *lepidum*; *cauliflower*, *brassica cauliflora*; *inule*, *inula viscosa*.

Greenish-white, 14; *common horehound*, *marubrum vulgare*; *mignonette*, *reseda odorata*; *linden*, or *lime*, *tilia Europæa*; *leak*, *allium porrum*; *broad beans*, *faba*; *plum-tree*, *prunus domestica*; *onion*, *allium cepa*; *olive-tree* (rarely gives honey or pollen) *olea Europæa*; *chestnut-tree*, *castanea vulgaris*; *wormwood*, *artemisia absinthium*; *ivy*, *hedera helix*; *saxifrage*, *saxifraga*; *henbane*, *hyoscyamus*; *loquat*, *eriobotrya Japonica*.

White, 15; *beaver-tree*, *magnolia glauca*; *almond-tree*, *amygdalus communis*; *eucalyptus*, *eucalyptus globulus*; *cherry-tree*, *prunus cerasus*; *pear-tree*, *pyrus communis*; *hawthorn*, *prunus spinosa*; *American locust-tree*, *robinia pseud-acacia*; *pittosporum*, *pittosporum*; *orange-tree*, *citrus aurantium*; *myrtle*, *myrtus communis*; *clématis*, *clématis*; *white clover*, *trifolium*; *bramble-blackberry*, *rubus fruticosus*; *savory*, *thymus serpyllum*; *rock-rose*, *cistus ladaniferus*.

The pollen gathered on those flowers by the bees has not always the same color as the flower, but varies often. The red poppy gives almost black pollen; borage has greenish pollen; pumpkins and others of the cucumber class have orange pollen, and so on, while many have the same pollen as the color of the flowers; as the marigold, yellow; the myrtle, white; the beaver-tree, white; the saxifrage, greenish, etc.

For our alpine region, May is the big pollen month, and it is most pleasing to the eye to contemplate the full colors and the intermediate ones represented in the rainbow—certainly not in the same order, as the bees' smartness does not reach so far, though, as we shall see, never a bee mixes two kinds of pollen in one journey, and generally she does not mix it in the cells. How often, when taking out such a beautiful comb of pollen, have I regretted being unable to show it to as many friends of nature as possible, as the brilliant hues soon become deteriorated as they are exposed to heat or dampness.

Different flowers, as everybody knows, give different odors, and some have greater powers of attraction than others, some by color, but many more by odor; and as the scent goes a considerable distance it draws the insects to the field of labor from very far. Most likely one scent counteracts another one, and bees neglect some flowers altogether where the strongest-scented prevail. In this case it is the perfume which forms the only attraction, and doubtless the

sense of smelling is highly developed, though, as will be seen further on, the sense of sight is a great factor in the life of the bee. Certainly bees of weak hives remain near home and sip the sweet nectar from minor honey-plants, as their lives are too precious for the defense of their hives.

Nice, France, Jan. 7.

To be continued.

HONEY-DEW RARELY AN EXCRETION.

Some Authorities who Believe that Honey-dew is Generally a Secretion or an Exudation.

BY D. M. MACDONALD.

The editor of GLEANINGS loves to look at both sides of the shield, even when a controversy leads to views contrary to his own conclusions; and a favorite phrase of his is, "Let us have the truth, strike where it may." That is the true spirit in which this subject should be approached; because the question of honey-dew has two sides. In my original article, reprinted in GLEANINGS, p. 763, '09, I distinctly stated that there are two kinds, differing considerably in composition. I am chiefly interested in the question circling round the question of *excretion vs. secretion*. Dr. Gordon-Hewitt, on page 176, gives it as his opinion that honey-dew is an "excretory product;" and Dr. Phillips' conclusion is, page 177, "Most of it is in the nature of an excretion." The latter goes further, and asserts that I am mistaken when I state that the leaves "secrete a sweet liquid." On these points I join issue with both authorities. I know plants secrete such a saccharine juice. I have seen it. Seeing is believing. I have tasted it, and therefore I know it tastes sweet.

I support my own limited knowledge by the following trustworthy authorities. The Abbé Boissier de Sauvages, who, in 1763, first wrote extensively on honey-dew, described two kinds: "One species flows from the leaves of trees," i. e., it is then independent of any aphides.

From Leibeg I quote the following: "In a hot summer the leaves of the lime and other trees are covered with a liquid containing a large quantity of sugar. The generation of sugar takes place in the leaves."

Langlois observed that, during a dry summer, "the leaves of the linden-tree became covered with a thick and sweet liquid in such quantities that for several hours a day it ran off the leaves like drops of rain."

Dr. Darwin regarded honey-dew "as an excretion or a secretion from the surface of the leaves."

Sir J. S. Smith states that he frequently observed "drops of a clear liquid trickle from the leaves, and this secretion is of a saccharine nature."

Dr. Bevan, an excellent authority, recognized two sorts of honey-dew, "the one a secretion from the surface of the leaf."

The venerated Langstroth wrote, "It is very difficult to ascertain, at all times, the

special source of honey-dew, whether from trees or aphids; but the accumulated nectar may force itself through the *cuticle of the leaf*, thus producing honey-dew."

One of the best authorities on the sources of nectar is Professor Gaston Bonnier. In his "Les Nectares" he has described the production of nectar *without aphides*. Indeed, in many parts of Europe this honey-dew is so plentiful that apiarists transport their bees there. Here are Bonnier's conclusions:

"The excreted liquid of aphides is not equally sweet, and the bees harvest only that which is *very sweet*. They generally prefer the true honey-dew (miellée) which *exudes* from the leaves. I have often seen some trees, and even all the trees, covered with an abundance of miellée falling in small drops, *although there was not a single louse on the higher limbs*."

Now for some practical and scientific bee-keepers. Professor Cook states that he saw trees coated with drops of sweet liquid which could be there only if given off by the leaves. Mr. Loveday, a gardener bee-keeper, and a very observant man, in Vol. 26, *British Bee Journal*, writes, "Honey-dew either forms upon or exudes from the leaves of trees and plants; and if the trees are examined, few of them will be found infested with aphides."

Our late editor, Mr. Broughton Carr, writing in 1898, page 301, says, "Honey-dew is not the excreta or waste matter of the aphids, or green fly, but, on the contrary, is a saccharine substance or sweet juice which *exudes*, under certain atmospheric conditions, from the surface of the leaves of trees. Consequently there is no real analogy between the two substances."

Mr. Cowan, the editor of the *British Bee Journal*, records his opinion as follows: "We are perfectly aware that opinions are divided as to the source of honey-dew; but we agree with those who think it generally is an *exudation* from the pores of leaves under certain conditions of the atmosphere, although it may sometimes be produced by aphides. We have on several occasions examined trees producing honey-dew in abundance that were free from aphides."

One of your correspondents some time ago described his sample of honey-dew as "deliciously fine." Was this "bug juice"? I trow not. Professor Surface (with whom I am supposed to differ) on page 623, 1909, says, "I believe it is comparable to the production of milk." Does not that imply that it is a *secretion*? And, by the way, on the same page the learned professor, speaking of the cornicles, says, "It is not *always* secreted by this means," implying that it may be sometimes. Messrs. Kirby and Spence, followed by many of our entomologists, distinctly assert that clean limpid drops issue from these two setiform tubes. One authority I have consulted says, "They possess two horn-like processes from which exude small drops of a saccharine fluid called honey-dew, a favorite food of bees and ants." Dr. Hewitt maintains I am entirely wrong as to the

cornicles; but if so I am erring in good company.

I can not do better than ask your readers to study Mr. Cowan's able summing-up of the discussion of the subject at the *Conversazione* in issues of the *British Bee Journal*, April 28 and May 5, and especially his conclusion that honey-dew is produced by exudation of the leaves.

Banff, Scotland.

TWIN NUCLEI VS. SINGLE NUCLEI.

The Advantage of Using Cells in Place of Virgins in the Raising of Queens.

BY M. T. PRITCHARD.

[In order to understand fully the article which follows, by Mr. Pritchard, the man who has charge of our north yard, the reader will need to turn to our editorial on page 336. Mr. Pritchard raises a very nice grade of queens, and a large number as well.—Ed.]

Just now we are making up our nuclei for our summer's work, and the same problem confronts us that has for the last four or five seasons, which is, scarcity of bees. We have found that $\frac{1}{2}$ lb. of bees is about the smallest amount with which we can start a nucleus and have it keep up its strength throughout the season. We have also found that, where this small colony is divided by a thin board partition, brood-rearing is not interfered with, and it makes a home for two queens as well as one; and since we aim to have about 350 virgins in the mating-boxes all the time (at the basswood apiary alone), the saving of 87 lbs. of bees is a strong point in favor of the twin boxes. To look at this number of queens every day is no small job; and when we can, by going to and opening one box, see two queens instead of one we have saved half the travel and nearly half of the time required.

Mr. Bain objects to the twin box on account of the difficulty of introducing virgins. This I do not take into consideration, because I do not believe in introducing virgins, for several reasons. First, the running-in of virgins is a slow job, requiring three or four times as much time as it would take to introduce the same number of cells, and the loss in introducing is much greater; and while it is true that a cell can not locate itself in the warmest part of the box, it is also true that queenless bees will always cluster around a ripe queen-cell, no matter what part of the box it is in, and a cell in a cluster of bees, even though it is a small cluster, will be better cared for, and will hatch sooner, than if it were caged in a strong colony.

I find it just as easy to destroy a scrub queen that hatches in a nucleus as though she hatched in a cage, and the work of caging the cells is all saved. And while it requires about 36 hours on an average for the cells to hatch after being introduced to the nucleus, yet I do not consider it a great loss of time over the introducing of virgins, because, in order to run in a virgin, the nucle-

us must be left queenless at least 24 hours, while the cell is introduced within an hour after the laying queen is removed.

That a laying queen on one side of the division will draw bees from the other side, I surely think is a mistake, as I have mated over 7000 queens in twin boxes, and never saw that happen; and I am thoroughly convinced that, to go back to single nuclei, would be a long stride in the wrong direction.

Medina, Ohio.

HOW TO SATISFY THE BEES IN THEIR DESIRE TO SWARM, AND YET KEEP THEM AT WORK.

The Shaken-swarm Plan Without Much Increase.

BY A. J. HALTER.

Bees that make preparations for swarming will lessen their activity as soon as queen-cells are started. This has a tendency to make the queen gradually ease up on laying until a swarm is ready to come out. The time occupied in anticipation often varies in accordance with weather conditions, the strain of bees, the age of the queen, strength of colony, yield of nectar, the amount of honey already stored, and the room still left for storage. The result of this lessening of activity during the swarming period may mean a serious loss in the amount of comb honey produced during a short season.

The use of an incubator does not do away with the inclination on the part of a hen, after laying a dozen or more eggs, to want to hatch her chicks; but by taking away the eggs and depriving her of the opportunity to sit she will continue laying. Why can not a *queen* be made to start laying and the bees kept in a state of activity instead of leaving them to cast a natural swarm? A practical bee-keeper can tell when a colony is making preparations to swarm by various symptoms; and, instead of waiting until the swarm emerges, he can make the proper manipulations to forestall such action.

At the opening of a honey-flow there are always some colonies not strong enough in bees to store in the supers. At the same time, others may be on the verge of swarming, while still others are in the normal condition to store honey abundantly. With a good strain of bees we need not fear many swarms until the first super is well started, or until about a week or ten days after the main flow is on.

HOW TO FORESTALL SWARMING AND MAKE THE BEES GO TO WORK.

When placing supers on Danzenbaker hives I contract the brood-chamber down to nine frames and a division-board. This makes it more convenient to get at the frames, and at the same time has a tendency to crowd the bees into the supers. As soon as a colony is found making preparations to swarm, all frames with the brood

and honey, including the super and the bees that are in it, are given to some other colony; the brood is put in an upper story over a weak colony. We now have a "shook" swarm, or one that practically amounts to a natural swarm. In fact, I would treat a natural swarm just as I would this "shook" swarm that I have mentioned. Place six or eight frames with inch starters in a hive on the old stand; remove the super-cover and put the regular Danzenbaker winter cover over the hive-body, giving the bees lots of air as well as shade and plenty of room. In from three to five days after this has been done, and the combs are well drawn out and the queen laying freely, remove all but five of the combs and select four combs of the sealed brood from the upper story of the weak colony, placing two of these combs on each side of the five new combs left in this new hive on the old stand. Then put on the super—the less honey given, the better. The new combs have started the bees and queen so that all are active. The frames of sealed brood are for the purpose of strengthening the working force. The queen can then keep depositing eggs as fast as the bees emerge from the cells, and the honey will be stored in the super.

This plan has given very satisfactory results in this locality, especially with the shallow frames. It is a useless operation, however, if the colony possesses too old a queen, or one that is likely to be superseded. One should be careful not to leave any brood in the hive when making "shook" swarms, as I have not been successful when I have done this.

After all the weak colonies are built up by adding brood from the "shook" swarms, or when for any reason there are no more weak colonies, I bring a queen with several quarts of bees in a swarm-basket from another yard and run them on to the brood-combs taken from the said shaken colonies. These combs, however, should be free from bees before releasing the queen and the bees from the basket.

I find it profitable to leave surplus combs in the upper stories of some of the weak or late colonies, and at the end of the season after the late flow there will be from 30 to 50 combs of sealed honey. These may be distributed among the colonies run for comb honey, after the bees are put in winter quarters on ten frames. The strong colonies thus produce the comb honey, and the weak colonies help out on winter stores.

All queens that have passed through two honey seasons are destroyed immediately after the close of the basswood flow, or about the first of August, and ripe cells are given the queenless colonies. This gives a majority of young queens at the beginning of each season, and none are old enough so that they are likely to be superseded during the height of the main flow. This plan should not be overlooked when running for comb honey.

Akron, Ohio.

Heads of Grain

from Different Fields

Queens Mated from Upper Stories.

Mr. Root:—Please refer to the Chambers requeen-device in GLEANINGS, p. 178, 1909, and to the article by A. J. Burns, page 58, 1910, and give me your opinion as to the following described operations:

Mate a queen from above, using a flight-hole $\frac{3}{8}$ inch in diameter through the rim of a wire and wood excluder, facing reverse of main opening, with mosquito-netting so placed on the under side as to allow communication at either side through the space between the hive side and the first wood slat of excluder. After the young queen is established, reverse the positions of the queens and bees, disposing of the older after assurance that conditions are satisfactory.

The conditions are that I am running for extracted honey, and natural swarms in April are not unusual, about ten days prior to locust bloom, which supplies considerable nectar just after May 1, under normal conditions, and is succeeded by the main flow shortly after May 15. Use three deep supers under the excluder, and two above, and have them all filled with bees, as I succeeded in doing last season, and give the queen-cells in West protectors to secure the laying of the new queens just at locust bloom, at which time I had the greatest difficulty with swarming last year. This contemplates the use of spring feeding or honey in combs as described by Mr. Doolittle. The reversing would be done when the bees were busy.

I take it that Mr. Burns' failure was largely due to lack of colony odor above and to the season of the year; but I should like to have some assurance on the subject. If covering the entire excluder with netting is necessary, it could be done; but the flight-hole would probably have to be larger, and I am not certain as to the size of the hole for mating the queen, although I have prepared several excluders, and widened the holes so as to make them $\frac{3}{8}$ inch in their smaller dimension. My gravest doubt is as to the practicability of reversing the queens, and I had intended making the communication through the excluder entirely free after the new queen laid, for several days before reversing; but possibly the Burns article indicates the contrary. Will the procedure possibly prevent swarming?

ARTHUR M. WHEELER, JR.

West End, Virginia, Jan. 20.

[This matter was referred to Dr. Miller, who replies as follows:]

To begin with the closing question, if the young queen becomes established in the lower story, there ought to be no fear of her swarming that season. No more ought there to be any fear with the Chambers plan, page 178, 1909. This on the general principle that, if a young queen does not swarm until she begins laying, she will not swarm at all her first season, provided she remain in the hive where she was reared. And it probably matters little whether she may have been reared in the hive from the egg or introduced as a virgin.

Mosquito netting is quite commonly understood to be of cotton material; but that would hardly work in the present case, and no doubt wire cloth is meant, for that may also be used as mosquito-netting.

The failure in the case of Mr. Burns ought hardly to be laid to the season, provided the original queen were old, for fall is the usual time for superseding, or at least toward the close of the harvest. In another respect the season might be blamed: for an interloper is likely to have kinder treatment during a flow. The suggestion as to lack of colony odor looks reasonable. Mr. Burns allowed two openings, which together were less than a twelfth of the upper surface of the hive, and these openings were partly closed by excluder zinc, while Mr. Chambers allowed mostly opening, the air above being thus of the same odor as below. Mr. Burns also allowed free passage for the bees from the very first; and with a vigorous queen below, a worker of an inquisitive turn going up would not feel kindly toward a strange virgin. While Mr. Chambers gave free passage for air, he gave at first no passage for bees.

The $\frac{3}{8}$ hole would be plenty large for the queen, and probably also for the bees. With entirely free communication between the two stories through the excluder for several days after the laying above, and before reversing, there ought to be no trouble upon reversing; yet the whole question must be submitted to the bees before you can be sure.

Chickens Eat Nothing but Drones.

Allow me to add to the article by Lewis Elaw, p. 328, May 15, in regard to chickens eating drones. My brother and I have each a flock of chickens which keep the undesirable drones cleaned out. We have to use wire fencing around the colonies we wish to save, to keep the chickens out. We have watched the chickens many times, and with glasses too, but have never caught them eating any thing but drones. We have also tried different breeds of chickens, but the bees soon chased away all colors but the buff.

I am tending a good many of my neighbors' bees, and I have found several cases of pickled brood. Is it customary to shake as in foul brood, or do you just take out the affected combs? Would the sealed combs of honey be fit to leave in or to use for feed?

I have access to all the bees within $1\frac{1}{2}$ miles of my apiary. If I were to Italianize all the bees within that radius in June, and then again next August, and should I give them *another queen*, would I then have pure-bred queens? I should like to buy one or two breeding queens and raise my own.

Clymer, Pa., May 25.

S. W. UBER.

[It is a question whether it is profitable to allow drones to become so numerous as to make good feed for chickens. My impression is that it would be cheaper to use full sheets of worker foundation and stop the useless breeding of drones and buy chicken feed.]

I do not know exactly what pickled brood is. The probabilities are that most cases of so-called pickled brood are nothing more nor less than ordinary dead brood. It may have been chilled or overheated, or it may have been poisoned during the spraying season. As a general thing a colony suffering only from pickled brood will soon clean out its dead and start new and healthy brood. On the other hand, pickled brood often looks very much like the European type of foul brood. If you have any of the dead brood of any sort in your yard at the present time you had better send samples of it to Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C., for examination of the bacteria.

If you introduce Italian queens the second time, as you describe, and allow no queens to be reared in the apiary, you would have pure stock; but the probabilities are there would be some queens reared in the hives, and these would send out drones having some black blood, in all probability. If these queens survived the winter they would send out the same kind of drones. However, your Italian stock, to all intents and purposes, would be pure.—ED.]

Chickens do Not Eat Worker Bees.

On p. 328, May 15, chickens are mentioned as eating drones. I think that, if closely watched, you will find they nearly always eat drones only. I saw a chicken eat 35 inside of about 15 minutes one day. He was there for a much longer time, and would go from hive to hive, and never made a mistake day after day.

CELLS STARTED IN LAYING-WORKER COLONY.

My cousin had a queenless swarm this spring that developed laying workers. He looked the hive through several times, but could not find a queen, and there was no worker brood at any time this spring; but the bees started queen-cells and hatched a queen—another proof that bees steal eggs.

I had a swarm that escaped from a hive with an entrance-guard misplaced. The same morning, I refastened the guard and left it for ten or fifteen days, then found plenty of eggs in the hive, proving that a laying queen was present. It was the first swarm, and I suppose the old queen went; so it looks as if the young queen became fertilized in the hive.

OLD AND YOUNG QUEEN IN THE HIVE DURING A HONEY-HARVEST.

I had a weak queenless swarm last fall after the honey-harvest was all over. I gave them eggs, and they started queens. Later, just before the queen

hatched, I gave them a laying queen. Six weeks after, I looked and found both the old and young queen laying, and that with practically no honey coming in—something a little unusual.

Do beans ever yield honey?

Marshall, Mich., May 21.

G. F. PEASE.

[See answer to Uber.

It is not uncommon to find cells started in laying-worker colonies. The bees seem to know that conditions are not normal, and they will make abortive queen-cells. The larvæ in these cells will develop about so far, some of them will die, and others will reach maturity; but of course they will be only drones and rather overfed drones at that.

It is not uncommon to find an old and a young queen in the hive at the same time, even after the honey harvest. If the old queen is failing, the young bees and the new queen will very often tolerate the old mother; but as a general rule she will be found missing toward the cooler part of the fall. —E.D.]

A Hive-Body Filled with Sheets of Foundation Placed Below the Brood-Chamber to Prevent Swarming.

I have read about some of the late devices for preventing swarming by giving room below the brood-chamber. Having tried different plans I very soon learned that an empty hive-body would give room, and in some cases retard and perhaps prevent swarming. If the lower hive is provided with drawn comb it will be filled with brood and honey, and the supers neglected. I think the cleared affairs would be expensive for just this purpose.

A few years ago, while I was working on this subject, the full set of frames with full sheets of foundation suggested itself; and while I tried only a limited number the results were satisfactory. I reasoned this way: If a colony needing more room were given foundation above and below the brood-chamber the bees would work above rather than below the brood from choice, and give the desired room below the brood. I would not leave the foundation below any longer than necessary, as all supers, etc., should be removed when the honey-flow is over. These frames of foundation may be used as brood or store combs after accomplishing their anti-swarming purpose.

Oswego, N. Y., May 7.

F. H. CYRENIUS.

Another Defender of the Black Bee.

I have read Mr. Macdonald's article, page 296, May 1, and can sign my name to every word of his defense of the black race, for this country as well. I have had black bees for thirty years, and have had no trouble from wax-moths. When asked what I do to keep the moths from killing the bees, my answer is, "Nothing." I see to it that the colonies have enough honey and a good queen; and if any colony then allows moths to nest in the hives in sufficient numbers to harm them I should want that colony to be killed, any way, for I would not consider it worth any thing.

My bees are easy to handle; are vigorous; they swarm very little; and, although I am not in a good locality on account of so much cultivated land, I have secured in fair seasons 100 lbs. per colony. Well, I have kept improving my stock while several of my neighbors have introduced Italian blood only to their sorrow. There are many large bee-keepers who keep only black bees, and they are well content to leave good enough alone and say nothing about it.

Elk River, Minn.

G. D. HEURING.

The Non-swarming Devices Found Satisfactory.

On p. 295, May 1, is shown an "anti-swarming device" said to have been invented by Mr. Junge. I wish to say that I have used this device in my bee-yard for a couple of years or more. I use slatted fences spaced $\frac{1}{8}$ inch in a $\frac{5}{8}$ -inch super, the super having four $\frac{1}{4}$ -inch holes on each side covered with screen wire. There is also a shutter to close down over the holes in cold weather. I have tried these devices, without the slatted fences, using the four-inch plain separators instead, and pushing the hive forward on the bottom-board so as to leave an opening at the back for ventilation. I am using in some of these a $\frac{1}{2}$ -inch space between the separators. So far as I have used these, no swarming has taken place from any hive under which they have

been placed; but I would advise going slow on the proposition. The advice on page 278 is good.

The opening of the non-swarming shown on page 299, by Geo. H. Bedford, is, in my opinion, too large; and when the honey-flow stops it is an invitation for robbers to commence their work.

Dunlap, Wash., May 11.

M. Y. CALCUTT.

Pollen from Frosted Flowers Made Trouble.

I think that B. I. Gilman, p. 248, April 15, will find that the trouble with his bees was the early pollen gathered. All of the pollen was used up during the honey-flow in September and October. That honey was from white chaparral, which yields no pollen. After this there came a hard freeze that killed all the flowers, and the bees got no more pollen until February; then they got some from mistletoe and some other small shrubs that were badly frosted; then the trouble began. The voidings looked like pollen grains mixed with water. It did not resemble the dysentery that I have seen up north. The difficulty disappeared with warm weather and lots of flowers, but left some colonies weak. It was worse with the blacks.

Moore, Texas, April 26.

T. HOLMES.

[There may be something in your statement to the effect that pollen from frosted blossoms would cause trouble. We never heard any thing of the kind before. —E.D.]

Do Queens from Swarming-cells Cause Deterioration?

I am pleased with Alexander's abrupt, convincing style of writing. One thing he says I can't understand—namely, "Bees deteriorate when queens are reared from swarming-cells." Has this question been discussed? If so, when? It may be true, but I want to know his explanation of the matter.

Chatham, Va., May 4.

BRUCE ANDERSON.

[There was some discussion on this question at the time Mr. Alexander's statement was first published in these columns. As we remember it, Mr. Alexander explained his position by saying that swarming-cells had too much of a tendency to develop a swarming strain. Bees given to swarming are not profitable. He thought it much better to breed non-swarming strains from cells the larvæ of which had been well fed out of the swarming season. —E.D.]

A Queer Place in a City for a Swarm to Locate.

During the noon hour of July 10 a swarm of bees suddenly appeared on East Market St. and entered a storm-water-catch basin through an iron lid having several holes inserted to allow water to enter. The location in question was about 100 feet east of Main St., in the business center of Akron, a city of 60,000 inhabitants. Being in the vicinity at the time stated, my presence was requested; but the queen had entered before I arrived on the scene. For the time being they certainly were masters of the situation. Vehicles, automobiles, and pedestrians all shared alike in making their immediate presence elsewhere; nor did they yield when a policeman arrived with a big stick and a fine polished badge. After all had quieted down, the iron lid was pried up and the bees were hived in a box to be removed to a more remote locality.

No doubt bees always seek a location convenient to water; but they were unwise in making their selection on the side of a street opposite where a saloon is located.

Akron, O., July 30, 1909.

A. J. HALTER.

Who Pays the Cost of the Cans?

When a producer of honey sells his product, must he add the cost of the cans or lose that amount? I have asked several bee-men. Some say add on the cost, and some do not.

Arnim, Texas, May 7.

A. F. KEMP.

[As a general rule the producer furnishes the cans. When he makes a price on his honey, that price, unless no definite statement is made to the contrary, includes the package. This is true of comb honey, and in nearly all cases it is a rule with extracted. —E.D.]

Our Homes

By A. I. Root

Rulers are not a terror to good works, but to the evil.—ROMANS 13:3.

I am not come to send peace on earth; I came not to send peace, but a sword.—MATT. 10:34.

Yesterday, May 19, at the State conference of the Congregational churches of Ohio, at the annual meeting held in Kent, Rev. W. L. Beard, District Secretary of the American Board, who has recently returned from a trip to China, gave us the following facts in regard to sending cigarettes over to China. See Home papers in our last issue; also page 324, GLEANINGS for May 15, 1909. Well, you may be sure I not only got as close to the speaker as I could conveniently, but I listened with unusual attention to what he said about the cigarette trade. Recently in Foo-chou, China, a city with over a million population, the American Tobacco Co. undertook to develop a trade in their brand of cigarettes. First they sent a good man to canvass the city, with samples; but he was unable to find a single dealer who would take hold of them. (Dr. Ament, just before he died, told us, you may remember, that a most wonderful change is now taking place in China.) The salesman reported to headquarters his want of success. Then they sent a better and more experienced man (great God! think or it—"better and more experienced" in what?). Well, this man failed also. Then they sent out a third one—the best man they could find, and said, "Surely *he* will get our business started in Foo-chou." But he failed likewise, and cabled back for further orders. They told him, before deserting the field, to take a great quantity of cigarettes and scatter them broadcast among the children. The *children* would smoke them, as they did not know any better, and in this way they would "create an appetite." They worked along the line outlined by the fellow who was making an address at a convention of saloon-keepers when he said, "Gentlemen, nickels spent now among the boys in creating an appetite will bring in good round dollars later on." So this experienced salesman employed a dozen runners to go about the city and *give* cigarettes to the children! They reasoned that, when the children got a taste for them, they would go to the dealers with their pennies, and thus induce them to keep in stock goods that were urgently called for. But, may God be praised, they failed even in this. With all their shrewdness and persistency the great American Tobacco Co. had not caught on to what the *missionary* is doing. Even the Chinese *children* refused to accept them, and others took their free samples and trampled them in the mud before the eyes of the distributor. Dear friends, our prayers and my own poorly worded petitions to the wise and kind

Father were answered, and I and the rest of you *did not know it*. Once more may God be praised; and now a verse of that beautiful hymn comes bubbling up in my soul again—

Hail to the brightness of Zion's glad morning,
Long by the prophets of Israel foretold!
Hail to the millions from bondage returning!
Gentiles and Jews, the blest vision behold.

But this is not all, dear friends: This missionary said he well remembered the time when the leading officials of Foo-chou said they did not want any more missionaries; they had caught a glimpse of what was going on in America and the rest of the world, and they were ready to adopt new methods of doing *business*: but when it included "*missionaries*" they said, "No, no! we do not want them—haven't any use for them. If you will take the whole lot who are here already, and take them away and send them back, we shall be a great deal better off."

They made this statement, put in different form, at every turn; and I do not know but many of the missionaries were a poor discouraged lot. They kept on, however, working and praying; and later on the Y. M. C. A. was established in Foo-chou, and I presume in other Chinese cities too. The Y. M. C. A. seems to have obtained favor, as it has in thousands of other places where other lines of missionary work have failed, and now we have open doors for the spread of the gospel of Christ; and not only "open doors," said Bro. Beard, "but the doors are pulled clear off the hinges, and carried away. They have no more use for them."

And this reminds me that it is not only in Foo-chou where cigarettes are ruled out by law, but the whole great nation of China, with its *four hundred millions* of people, has passed an edict or law to the effect that no man, woman, or child under 25 years of age shall use the baneful thing. Why, come to think of it, China—yes, heathen China (as we have been wont to call it) has outstripped the United States in this much-needed reform.

"But," says some one, "does China *enforce* the law? We have laws in the United States; but what is the good of laws while we have police and mayors who are not in sympathy with those laws?"

Just listen while I tell you how China does things. You know about her banishing opium and the opium-dens. Well, in and around Foo-chou they used to have great poppy-fields—fields of beautiful poppies—beautiful if one would just use his *eyes* and did not stop to think. China has not only ruled out the opium-dens, but she has ordered her people to *stop growing* poppies. When Chinamen of wealth were making great fortunes in growing opium they were not inclined to obey the law. They said, as some people say here in America, "It is nobody's business what crop you raise on your own land." But the government sent soldiers and mowed down the poppies. The owners, with their money to back them,

were stubborn and contrary, like some of the saloon-keepers in dry towns in Ohio. But the Chinese officers said, "Here, don't you plant any more poppies or we will take care of you." Once more, however, like the saloon-keepers of Ohio, they gradually started in the business again. I think they were warned three times to obey the law; but after the third offense, these offenders, about half a dozen of them, were arrested and brought into the city; and to set an example before others, the Chinese officials did what? Why, they *beheaded* the whole gang of rebels—rebels against good government and common sense.

Now, I had said "amen" to every thing else in Bro. Beard's talk; and I was just ready to clap my hands where I heard these six or seven men were brought to punishment; but when the speaker said they were all beheaded I did not clap my hands with the rest of the crowd. I had raised them up, and was almost ready to bring them together; but when I thought of such a sudden and awful method of bringing an impenitent soul so suddenly into the presence of his Maker I hesitated. I am glad those men were punished; and may be under the circumstances it was best for all concerned to do this, for since then there have been no more poppy-fields flaunting their beautiful colors in and around Foo-chou. If those men could have been shut up for life or for a term of years while the Y. M. C. A. took them kindly in charge and taught them how Christ Jesus left his throne in heaven and came down to a suffering and sinful world, is it not possible that one or more of those rebellious citizens might have been made a *good man*? The Chinese way of reasoning seems to be along the line of that old adage, that "the only *good* Indian is a *dead* Indian." Well, friends, what is it that we need to-day here in our own nation to teach men to reverence and respect law? Shall we take off their heads? God forbid; but something should be done to make the law *more* of a terror to evil-doers. Instead of taking off their physical heads by law, let us prevent mayors from being any longer the "heads" of our great cities—that is, when they absolutely refuse to live up to their oath of office. We were informed at the conference that men who love darkness rather than light because their deeds are evil have just succeeded in defeating the Black bill—a bill to remove mayors and other officials from office when it is evident that they do not propose to enforce law. Our conference passed a resolution regretting that this good and righteous bill should have failed for the time being. But it only puts us back a little. We *shall* prevail in the end, for we *are* "marching on."

On page 363 of our last issue I said I had received a copy of a law recently passed here in Ohio. See copy of it on next column.

May the Lord be praised that we have a Governor here in Ohio who is willing to put down in plain black and white his official approval of the above just and righteous

law, no matter what amount of pressure the American Tobacco Co. and the cigarette manufacturers may have been enabled to bring to bear on the question. Now, my good friends, here is something for *you* to do. If you have reason to believe that those

(House Bill No. 46.)

AN ACT

To amend section 12965 of the General Code, relative to smoking or using cigarettes by minors.

Be it enacted by the General Assembly of the State of Ohio:

SECTION 1. That section 12965 of the General Code be amended to read as follows:

Sec. 12965. Whoever sells, gives, or furnishes to a person under eighteen years of age a cigarette, cigarette wrapper, or substitute for either, or a cigar or tobacco, shall be fined not less than twenty-five dollars nor more than one hundred dollars, or imprisoned not less than two days nor more than thirty days, or both; and for each subsequent offense shall be fined not less than fifty dollars nor more than three hundred dollars, and imprisoned not less than five days nor more than sixty days.

SECTION 2. That said original section 12965 be and the same is hereby repealed.

GRANVILLE W. MOONEY,

Speaker of the House of Representatives.

FRANCIS W. TREADWAY,

President of the Senate.

Passed April 21, 1910.

Approved April 25, 1910.

JUDSON HARMON, *Governor.*

You will notice from the above that there is now a fine of \$25.00 or more for anybody, old or young, who gives a boy under the age of 18 a chew of tobacco or a cigar or cigarette; and the purpose of this card is, largely, to ask you to help to have this law rigidly enforced, especially as it has the approval of the Governor of Ohio, Judson Harmon.

who sell tobacco in your neighborhood are not complying with this new and righteous law, will you do your part by letting them see a copy of it? I am going to have some cards printed containing the law as above; and if you will pass them around we will furnish as many postpaid, free of charge, as the State of Ohio or the whole United States can take care of. I refer to other States because it may do a lot of good to have people living elsewhere know what Ohio is doing. Now, then, send in your applications for cards—the more the better. Of course we expect you to use them judiciously, and where they will do good. Every teacher in the public schools of Ohio, I am sure, will be willing to present these cards before the school and give them to those who want one. Let us all rally together, and become personal *home missionaries* for the time being. Call the attention of the school scholars particularly to the fact that we here in Ohio propose to *stop* building bigger penitentiaries in Ohio, at least for our boys; and we propose, too, to stop building asylums to accommodate more idiots and imbeciles. We are not planning to "kill off the fools," but we are planning to stop growing that kind of crop, here in Ohio. "Whatsoever a man soweth, that shall he also reap."

Just as we go to press the following was put into my hands:

Dear Mr. Root—I am very much in sympathy with the general tenor of your sermon in the last GLEANINGS. I know much about the condition among our young folks, as they often come to me

for private advice. I have to-day tried to save one boy from paying \$75 to a quack for "a course of treatment." He told the boy that would not be all, only a good start, as it would take a long time to work a cure. And not a word can one say in print without bringing in protests from the good people. You have the advantage of me in this line. I once tried to give some earnest advice to boys in this line; but one of the editors returned the article, saying this sex question must be let alone. O God! how long? The boys must suffer all their lives; never be the men they might have been; and married women must often do the same on account of the lust of man, largely brought on by cigarettes, tobacco, and drink, but not by fruits, grains, and vegetables. I started out only to thank you for your article—show my appreciation. But it is hard to stop when I get started on this subject.

When you people come out here I am going to make you some drink of wheat, all my own make, costing about 3 cents a pound, and it is good, too, as well as perfectly pure and wholesome.

Most cordially,

Hudson, Ohio, June 7.

T. B. TERRY.

Health Notes

By A. I. Root

GOING WITHOUT SUPPER, ETC.

It is now toward three months since I have taken any food (except apples) after the noon meal; and so far, dear friends, I am more in love with it than ever; and I am just beginning to discover that it includes something that I had never thought of till recently. Most of you are aware that I have been in the habit of taking a little sleep of fifteen or twenty minutes before my dinner for several years past. It must have been thirty years ago when I began to break down, and my good old friend Dr. Salisbury said I should never think of eating a meal when tired out with either mental or physical labor. He said it would add ten years to my life if I would take a good nap just before dinner. He may have said just before each meal—I do not remember now.

Well, I have been doing this for at least ten or twenty years past. In fact, I could not hold out without it; and I want to say to all of you that any man, woman, or child who is troubled with indigestion will find it a tremendous help to get a good rest (and a short nap is the best thing in the world) just before mealtime, especially before the heartiest meal of the day. I think almost any physician will agree with this. The digestive apparatus can never do its best work when you are tired out and *used up*. Your rest over night has recuperated and recruited your system so that all the organs ought to be in good trim for breakfast. Now make a mark right here. I am coming back to this point a little further on. If you stop your work, whatever it is, before noon, go off to some quiet place where there is plenty of air, and lie down, and you will soon get in the habit of taking a little sleep. When you awake you will probably not be as hungry as you were before your nap, but your digestive apparatus will be in very much better trim to make the best possible use of the nourishment your dinner affords you. Now, I have for some twenty years

past been getting the rest needed before both breakfast and dinner. I have also of late been in the habit of having a nap *after* my five-o'clock supper. The reason is, I am "played out" if I do not have this rest; and without it I feel incapable of looking over the heap of periodicals (that come every day) toward evening. Now notice. My breakfast and dinner are taken according to Dr. Salisbury, but not my supper; and for years past I have been more or less disturbed during the night by indigestion, manifesting itself by nightmares, etc.; and when, according to my brother's suggestions, I went without my supper, these unpleasant symptoms ceased at once; and even though I went to bed feeling hungry and faint I always woke up feeling bright and well—no hunger at all. In fact, I greatly enjoy looking after the chickens, and taking a hoe and working in the garden until breakfast is *fully* ready. I am never in a hurry for breakfast at all. Now, on the old plan of three meals a day, before my dinner was all out of the way, a lot of rich and nourishing food was taken at five o'clock. Of course I felt hungry, and thought I needed food. Did you ever see a baby cry because it felt bad, and mistaken friends imagined the poor thing was hungry, and then added to its distress and misery by giving it more food? Sometimes nature protested to the extent of throwing up a whole lot, and then the baby could laugh and smile once more. Perhaps it is not much use to talk, for the greater part of you will think "circumstances differ;" but if you will just try it for three or four days, or a week, may be you will have some more kind words to express to your old friend A. I. Root.

Now look here. I have had just one regular supper in the past three months. I attended a Congregational conference where they had a banquet at 5:30 in the afternoon; and to avoid seeming odd or singular, and also to test the effect of supper, I decided to partake with the rest. By the way, this banquet was a model of its kind. We had cream-potatoes, nice bread and butter, eggs, etc., and all for 25 cents. Every thing was nicely served by the ladies of the church; and if all banquets were like that one, good wholesome food at an early hour, at such an exceedingly moderate price, I should not have much to say against them. Well, in order to see how a supper would work once more, I ate moderately about as I used to do, then rode in the open air about 35 miles in an automobile. The open-air ride should have helped to digest that supper if any thing would; but I was distressed all night, had the nightmare, had to get up one or more times, and got up in the morning with a bad taste in my mouth without a bit of the exhilaration and enthusiasm that I had all along of late enjoyed from the refreshing morning air. I said right away, "No more suppers for me." You see, with my present program I am thoroughly rested before each of the two meals of the day; and when I retire for the night the food taken at noon is

thoroughly digested and out of the way. There is a general cleaning-up of all odds and ends in the whole digestive apparatus. Before I go to sleep nature has a chance to mend, and close up and clean up everything in the whole machinery, for there is no trash lying around in the way to breed appendicitis, fever, and other ills.

Perhaps I should not omit saying that at just five o'clock I have three or four good nice apples. I spoke to Terry about it. He said that good raw apples can be so easily digested that they are taken care of and out of the way within an hour or two after eating them; and I tell you I enjoy my apples every day of my life as I never enjoyed apples or any other fruit before.

OATS FOR PEOPLE AS WELL AS FOR CHICKENS; ROLLED OATS VERSUS ROLLED WHEAT.

Mr. A. I. Root.—I have given some thought to nutrition, and read what you and Terry write on the subject. Have you read Bulletin No. 207, from the Ohio Experiment Station? I believe you will find it of great interest, and will wish to call the attention of your readers to it.

I have eaten Pettijohn's rolled wheat, and also rolled oats, and like the oats much the better, while the cost is only about half. I use the oats without cooking, with cream or goat's milk, to dampen them slightly. I chew them well, and find them very good food. I have been using them thus for three years, and am now heavier than at any time before in my life. I am five feet ten inches in height, and weigh 166 lbs. I have a boy of five and a girl of three years, and have not paid ten cents for medicine during their lives for either them or their parents. They usually have cocoa to drink, or goat's milk, and nearly always ask for some rolled oats (uncooked) to put into the last few spoonfuls of their drink; and nearly all the bread we eat is made with one-third rolled oats to two-thirds flour. Give this a trial, then advise all your readers to go and do likewise, and for ever after thank you and me.

I buy rolled oats in 90-lb. bags of Montgomery Ward & Co.; and when the people know their value the price will be very much higher than they now are. The price for May and June is \$2.18 per 90-lb. bag, while the cheapest flour is \$2.90 for 98 lbs. I see no reason why any one should need a roller to roll wheat at home when these oats may be bought for little more than the price of wheat, and are far better in every way. Compare the analyses of food stuffs below:

	Cost.	Water.	Protein.	Fat.	Carbo- hydrates.	Calories.	Ash.
Rolled oats.....	.03	7.7%	16.7%	7.3%	66.2%	1850	2.1%
Rolled wheat.....	.06	10.1	11.1	1.7	75.5	1685	1.6
Wheat flour.....	.03	12.0	11.4	1.0	75.1	1650	.5
Crackers, soda.....	.06	5.9	9.8	9.1	73.1	1935	2.1
Bread.....	.06	35.6	9.3	1.2	52.7	1205	1.2
Potatoes.....	.01	78.3	1.8	.1	14.7	310	.8
Beefsteak, round.....	.20	62.5	19.2	9.2		745	1.0
Eggs.....	.20	65.5	11.9	9.3		635	.9
Oysters.....	.20	88.3	6.0	1.3	3.3	230	1.1
Butter.....	.30	11.0	1.0	85.0		3605	3.0
Butter, Peanut.....	.12	2.1	29.3	46.5	17.1	2825	5.0
Peanuts.....	.07	6.9	19.5	29.1	18.5	1935	2.2
Evaporated cream.....	.09	68.2	9.6	9.3	11.2	780	1.7
Cocoa.....	.30	4.6	21.6	26.9	37.7	3210	7.2
Chocolate.....	.30	5.9	12.9	48.7	30.3	2860	2.2
Cocoa nut shred.....	.14	3.5	6.3	57.4	31.5	3125	1.3

Notice how well oats compare with wheat in every element, and particularly in protein and fat, the two important ones. And the oats are about one-half richer in protein than flour, and more than seven times as rich in fat. It is well known that the Scotch live largely on oatmeal, and they are good examples of brawny, healthy, and vigorous men. It is little less than criminal to feed growing

children largely on white bread and potatoes. They need more protein and fat than do adults, particularly the aged or idle. Notice bread and crackers. The latter have seven times as much fat and but $\frac{1}{2}$ the water. Eggs and oysters make a poor showing, considering price, while cocoanut, peanuts, cocoa, and chocolate show up well. The high cost of living and the cost of *high living* have made people "sit up and take notice" as never before.

The prices given in the table are, of course, only approximate, as they vary greatly in different sections and with different merchants.

I also use rolled oats almost exclusively as feed for my young chicks, so far as grain is concerned, and find it an excellent feed.

I should judge that the fine meal that might be sifted from these oats would be equal or superior to most meals as a substitute for pollen (for bees), as it is more highly nitrogenous. Peameal might be an exception.

Packerville, Ct., May 7.

E. P. ROBINSON.

The above letter came to hand some time ago. Since then we have been using a good deal of rolled oats; and the nicest gems I think I ever ate were made by mixing rolled oats with graham flour. The oats were first soaked in sour milk over night before being stirred into the graham flour. And, by the way, it never occurred to me before that rolled oats are not only *cheaper* than wheat or wheat flour, but cheaper for *chickens*, especially baby chicks, and, in fact, for chicks of any age, than any of the chick foods on the market. No matter where you buy your baby chick food, or prepared chick food of any sort, if you feed it in a pan or tight box you will find with the very best samples quite a per cent of some stuff that the chickens will not eat. Some of it they will consume if they are *starved* to it; but it certainly does not pay to force chickens to eat what they do not seem to want. Well, this rolled oats is, *every particle of it*, nourishing food, and the chickens will eat it up perfectly clean. The dust or fine flour, what little there is of it, if mixed up with water, or, better still, with milk, makes the best *wet mash* in the world, I do believe, for chickens of any age.

The table Bro. R. has given above is somewhat startling; but comparing it with other tables furnished by the Department at Washington I think it is about correct.

Now, just one thing more about no suppers. The meal that suits me best *just now* for breakfast and dinner (and, in fact, I have told Mrs. Root I feel as if I should like it winter and summer) is oatmeal mush baked slowly in an oven until it can be sliced up like bread.

Put several slices on your plate, right warm from the oven. Cover them well with butter; then put on some good thick honey, say the drainings from the uncapping-can. Now with a small pitcher of milk right by your plate (I rather prefer cold milk if I can get it, especially in summer) it makes a repeat fit for a king, or better still, perhaps, for a laboring man who works out of doors every day. I verily believe I would consent to be a vegetarian if I could have plenty of

oats cooked in this way with good milk and honey, and good crops of oats right in sight, growing on our own farm, to furnish oats for the family, as well as for the horses and chickens. Doesn't this come pretty near being "a land flowing with milk and honey"?

One of my recent "happy surprises" was that, since omitting suppers, I can eat honey for my noon meal in a way I have not been able to do for years past.

A CLIPPING FROM THE HOME PAPERS WHEN THEY WERE FIRST STARTED IN THIS JOURNAL 35 YEARS AGO.

While discussing Terry, Fletcher, Sinclair, and others, in regard to the amount of food really needed to sustain health, I recalled some of my experiments conducted in 1875, when the Home papers were first made a department in GLEANINGS; and to show you how history repeats itself I make the following extract from Chap. V., December, 1875:

We have in our home oftentimes discussed the comparative expense of the different articles of food, especially when there seemed unusual need of reducing expenses; and the difficulty of getting at any really definite figures in the matter finally resulted in the following experiments:

Nov. 1, for breakfast I ate five graham gems. These, with a cent's worth of butter, cost 3 cts. So far as the gems were concerned, my hunger was perfectly satiated; but I could with ease have eaten after this a piece of pie and perhaps cake—may be an apple or bunch of grapes also; but as I was "in pursuit of science," and bent on determining just how much food was really needed, I ate nothing more. Somewhat to my surprise I did not get hungry before noon, but, on the contrary, felt unusually well. At dinner I ate 4 oz. of rice, costing 3 cts., with one ounce each of sugar and butter, which made a very good meal for 5 cents. As I used few dishes for this simple repast, the labor of preparing the meal was also economized. The next meal was 4 oz. corn meal and half a pint of milk—cost 3 cts.

The fourth meal was $\frac{1}{2}$ pint of beans—cost less than half a cent. This amount seemed so ridiculously small that I spent the afternoon in pretty severe outdoor labor to see if it were really possible one could live on such an insignificant expense. To my surprise I felt unusually well, and yet this vegetable was one that always disagreed with me when eaten as usual with a full meal of other things. In all these experiments I had taken unusual pains to masticate my food, and, as a result, ate slowly.

Fifth meal, beefsteak and pork sausage, 1 lb., cost 16 cts. I should have eaten the whole with ease had not Blue Eyes petitioned for a part of "papa's supper," and so my supper cost 14 cents.

As the program was that I was to have what I liked, providing I could give the cost of it, I next chose ginger-snaps, of which I am very fond, and cheese. As I had eaten no fruit I chose a good glass of lemonade at the close of the meal, which cost 1 ct., the cheese 2 cts., and the snaps 8 cts.—11 cts. in all.

Seventh meal, $1\frac{1}{2}$ lbs. of potatoes roasted in the coals—cost less than half a cent; and the milk eaten with them brought it up to 2 cts.; but as I got hungry before supper I concluded that potatoes would not compare with the grains and beans.

Eighth meal—felt like having some more meat; and to try something a little cheaper I paid 25 cts. for a soup-bone. This gave a very good meal for about 4 cents.

Ninth meal—4 oz. oatmeal, and a most delicious meal it was, for about 3 cents.

Tenth meal—one gill of whole corn soaked in water 16 hours, the hull taken off in the usual way with a lye made of ashes, and corn boiled until thoroughly cooked. When eaten slowly with a little salt it made a good meal for only $\frac{1}{4}$ of a cent.

Eleventh meal, and the most delicious one of all, was simply whole clean wheat boiled until well cooked, and served with butter and clover honey. I ate about $\frac{3}{4}$ of a cent's worth, and about 2 cents' worth of butter and honey, but ate more than I needed.

Twelfth meal—oysters. They cost 10 cts.; milk 1 ct., crackers 2½; whole expense, 13½ cents.

Thirteenth meal—eggs roasted on the coals, a la boyhood days. This experiment was a failure from the fact that we roasted only five, and, after eating these, were so hungry that we ate a quarter of a grape pudding and a large slice of home-made gingerbread. The latter costs only 5 cents per lb., while the snaps are 18 at the grocery. Eggs would be quite expensive for a full meal at present rates (22 cts.), and we should probably want eight or ten to be equivalent to $\frac{1}{2}$ lb. of wheat.

In the above experiments it will be observed that we have paid little or no attention to sanitary matters, and we should be very sorry to discourage the use of meat, having at one time regained health by an exclusively meat diet of many weeks; but there is one very important fact elucidated, viz., that a more extensive use of our grains in their unground and unbolted state would not only be a great saving of money but a positive gain in health. As an illustration, a pound of wheat costs 2 cts., and is worth more in every way than a pound of flour that costs 4 cts. or a pound of bread costing from 8 to 10. Cracked wheat, it is true, can be bought of the grocer; but as it must inevitably pass through several hands before it gets to the consumer, they really can not furnish for much less than 6 or 8 cts. what they pay 2 cts. for. Much the same might be said of all our grains; and if you have never tried cooking them whole in the way we have mentioned, it may be worth while to try the experiment. If they are simply broken in two, say in a common coffee-mill, they will cook more quickly; and mills are now in the market for this purpose, in size and capacity from a coffee-mill all the way up.

The great strides that are now being made in science and the arts and industries are, by a kind of Yankee faculty for cutting "cross lots," producing just as good or even a better article, with less labor and machinery, less complication, and fewer hands employed. Suppose we had a job of work to do on the opposite side of a stream. We might go down stream a mile to get to a bridge, and then come back a mile on the other side, or we might roll up our trousers and splash through, and have the work a good way along by the time we reached the bridge. Some might say that the latter is an undignified way; but if it is the only road to honest independence, we would advise taking it. We can splash through the water on a small scale by taking the coffee-mill some evening and seeing how much money we can make by grinding wheat at 2 cts. per lb.; for even when ground very coarsely it can be made into most excellent bread. You can splash through the water again by purchasing meat that is good and wholesome, at 4 cts. per lb. instead of 16. And, again, by paying cash for every thing you buy, and insisting that you have it at the very lowest cash figure. Haven't you the cash on hand? Reduce your expenses so that you can lay up half of what you have formerly paid out for your table in the way I have mentioned; and before you are frightened for fear such a course may look undignified, reflect that some of the finest minds the world has ever produced have been obliged to study this matter as one of the fine arts—how to live cheaply.

We have plenty of men in our cities who make it a business to help those who are not afraid to splash through the water, by offering the staple commodities of life at very close figures indeed; but you must pay cash, for these men figure on so small a profit that it is entirely out of the question to add a per cent to cover the losses on bad customers, as most of our country merchants and grocers are obliged to do; and, for that matter, you can almost always make an arrangement with your own grocer, if you will tell him that his money is always ready, or, better still, if he is trusty, give him the money to get what you want when he goes to the city. If you have always the money in your pocket you need not fear but that you will always find him accommodating.

You see from the above that I went over the same ground where Terry and Fletcher have recently made such a stir showing

that we can not only get good health, but very much better health, by eating only a little of some plain and simple article of food, and only one or at most two kinds of food at the same meal. Not only this, but I had in some way caught on to the importance of eating slowly and chewing thoroughly. See italics in the third paragraph in the above. Again, I decided 35 years ago that the most *delicious food* I could get hold of was boiled wheat, with butter and clover honey. But the *cheapest* meal, and perhaps almost as delicious as the wheat, was hulled corn. Just think of it— $\frac{1}{4}$ cent's worth of corn satisfied the appetite and gave abundant strength to do good hard work in the open air! A meal entirely of beans cost a little more. Of course many articles of food cost more than they did 35 years ago; but it still remains true that anybody who cares to cut down living expenses can easily do it and have better health—yes, far better—than where we pay anywhere from 15 to 50 cents for a good square meal *three times* a day, week in and week out.

Much is said at the present time about the exorbitant prices of all sorts of food, etc. In order to show you that things are not in such a terribly bad condition now, let me make another quotation from that journal printed 35 years ago:

From quotations from W. P. Southworth & Co., 116 Ontario St., Cleveland, O., I glean the following:

Standard A coffee sugar by the barrel, 10¢ cents; retails for 12½¢. Golden syrup in 5-lb. kegs, 66 cents; retails at \$1.00. Cod-fish, 25 lbs., 5¢ cents; retails at 8 cents. German erasive soap, by the box, 4¢ cents; retails at 8 cents. Soda and saleratus, 10-lb. lots, 7 cents; retails at 10 cents. Oatmeal and barley in 20-lb. lots, 5 and 7 cents; retails for 8 and 10. Corn starch in 40-lb. boxes, 10 cents; retails at 15. Rice, 10-lb. lots, 8½¢; retails for 12.

Four hours ago I stepped into a neighbor's grocery and selected canned goods for my dinner. I ate a full forty cents' worth, and yet was no better satisfied than with my three cents' worth of wheat, butter, and honey.

I have selected only a few of the necessities as samples; tea, coffee, and tobacco would certainly be out of place in a home where economy is to be made one of the fine arts. It seems to me, to say nothing of other objections.

Dear friends, if you get right down to it, there are many things that are very *much cheaper* than they were 35 years ago.

"DIGGING OUR GRAVES WITH OUR TEETH."

My dear Brother:—GLEANINGS comes to our table regularly, and your kindly brotherly suggestions show that you find something in life of far more value than mere paltry dollars. I note with special interest what you say in your issue of May 1 relative to the omission of supper. I am sure your plan is an excellent one. As a rule our people are "digging their graves with their teeth." We have all been eating too much, even of "health foods."

Many years ago I practiced what you preach now, and found it very helpful. Then I came in touch with Dr. Dewey's and Haskell's "no breakfast" plan, and also omitted breakfast. While I have not strictly adhered to the plan, my experience has been that *one good meal a day*, about 11 o'clock A.M., and then a few wholesome crackers and good ripe fruit, as you suggest, about 6 o'clock P.M., are all that our bodies require to remain in good health.

I have pleasure in mailing you one of Mr. Haskell's books under separate cover. Please receive it with my compliments, and read as much or as little as you like. There is good in all these cults; and when combined with Fletcher's method of

"chewing the stuffing out" of every mouthful of food, we rise to higher levels of living.

Boonville, Mo.

E. W. PFAFFENBERGER.

Accompanying the above kind letter was a beautiful book of over 200 pages by Chas. T. Haskell, of Norwich, Ct. Price \$1.00. The title of the book is, "Perfect Health: How to Get it and How to Keep it. By One who Has it." The book is, from beginning to end, a story of how hundreds of ailing people cured themselves of various diseases without a particle of medicine. The book goes a little further than I have gone as yet, inasmuch as it includes going without breakfast as well as supper—one good wholesome meal a day. There are letters from more than a hundred people who were literally "digging their graves with their teeth," and did not know it till Dr. Dewey and Mr. Haskell opened their eyes. Some of our readers may remember that I gave a review of Dewey's book in GLEANINGS for March 1, 1896. Dr. Dewey at that time was having great success in curing people, even though they were down to the brink of the grave, by "going without their breakfast;" fasting, etc., and they are still alive, and he is still healing humanity in that way. Of course, going without your breakfast simply does not cure *all* diseases; but going without food till Nature has had a chance to catch up is certainly curing a lot of people. I was particularly interested in one chapter in the book where a lot of prominent people who had become strong and well by fasting met together in what they called a "fasters' feast." Both men and women, now strong and well, testified to having fasted all the way from three days to thirty of forty, and even *fifty-five* days in one case. Some of you may say you would rather die than go without eating for so long a time as the above. Very well; it is your privilege; but I for one am going to live to a good old age if so simple a thing as going without food will enable Nature to correct and remedy all ills. The author of the book tells us that going without breakfast *just twice* cured him of a headache that doctors had worked on before for *eight years* without effecting a cure. I do not suppose it makes very much difference whether you go without breakfast or supper; but in my case supper seems to be the better one to omit, because I have a good complete rest (and *sleep*) just before sitting down to the two other meals.

THE STARVATION CURE: WILL IT WORK WITH ALL PEOPLE ALIKE?

Mr. Root:—I trust I shall not be considered presumptuous for writing to you to warn you against attempting a prolonged fast as you proposed on p. 231.

Your attenuated body has not enough reserved material laid up in it. Your highly nervous temperament keeps the supply used up about as fast as it is digested. You have no surplus flesh. Some people store a great deal of surplus flesh until overloaded, and still continue storing.

Some store a great deal, but use it in case of need, and can perform great feats of prolonged exertion, and could last a long while. I believe some could last *twice* forty days. The system can be trained to control the storing and also the using, in certain

directions, or by different parts of the body or brain, by doing as Sinclair did, a little at a time; then a little more and a little more, with rest and change between for storing power again in the form of digested material. This is the way in which habits, either for good or ill, become established, that are so hard to break; and a habit may be either bodily or mental.

Many of our habits are inherited. We were trained in these before we were born or begotten. Habits formed by associations, either good or bad, are much more easily overcome, for good or evil than those inherited; and those inherited from temporary conditions of the parents, though not in many cases very striking and troublesome, are so stubborn to deal with as permanent conditions of many generations of ancestors. Here is where great mistakes are made by many would-be reformers through ignorance of these things.

I have had great opportunities for observing these things in a very extensive practice in applying the laws of hygiene, physiology, and phrenology instead of medicine—in cases among all classes of people, from statesmen to convicts in various parts of the country, and in many cases an uncommonly intimate and confidential personal acquaintance with the persons.

I don't want you to starve yourself to death yet. I want you to stir folks up on your varied subjects awhile longer. If you are going to depend on miraculous aid in your fast it would not prove much as to natural laws for the instruction of others; but don't think that I don't believe fully in a special dealing of Providence with our individual needs; but I believe they are mainly accomplished by natural means that we don't see.

In closing permit me to say I think it is "real naughty" of you to say it is "funny" for people to starve to death in a week of time in a desert or in shipwrecks. I don't believe you really think so. Their bodies are in the habit of keeping only a small supply of material laid up.

Lafayette, Ga., May 28.

C. W. LUDLOW.

Friend L., you are a good deal if not altogether in the right about the matter; but while I am feeling as well as I do now by simply going without any supper I do not think I shall try the starvation plan. As it is getting to be a sort of fad, however (for many people are trying it), we shall very soon have the truth pretty well sifted out. If I am correct, Sinclair was by no means a heavy or fleshy man when he started out on the starvation idea. In regard to your closing sentence, I humbly beg pardon for having left the impression that I have little or no sympathy for those who really starve to death. What I had in mind as being "funny" was that Sinclair had also been 72 hours without food, and, instead of being starved to death, he was in excellent spirits, and very much alive, indeed. And, by the way, my own family made a protest much like yours just as soon as I suggested a fast of several days.

PARCELS POST, ETC.

We clip the following from the *Cleveland Plain Dealer* for May 21. I want to call your attention to the fine piece of sarcasm at the close.

You can send a pound of merchandise from Cleveland to any one of twenty-nine countries—anywhere in the world, practically—for 12 cents. But if you drop it in the Cleveland postoffice for delivery in East Cleveland, or Akron (40 miles), it costs you 16 cents. You can mail a parcel weighing eleven pounds at the same rate to any foreign country. But if it is to stay in the United States, the limit is four pounds. The express companies have kindly lent their support to this arrangement.

SHORT WEIGHTS AND SHORT MEASURES; SCRIMPING IN FOOD PRODUCTS.

I have frequently spoken of hulled corn as a delicious and healthful food. While in Florida we used quite a little of it; and to save work in the kitchen, where fuel is expensive and the weather warm enough without being over a hot stove, we have used quite a little hulled corn in cans. Well, Mrs. Root has frequently called my attention to the fact that these cans were never full—some of them not more than two-thirds full. Just think of asking the consumer to pay for the can and the expense of putting it up, and then giving him short measure, just to save the fraction of a cent! When my attention has been called to this matter I have several times said there ought to be a protest against such little and mean methods of robbing the consumer; but I did not know just where to direct my protest. In view of the above, you may be sure I rejoiced to receive a leaflet from the United States Department of Agriculture in regard to the misbranding of corn. Some 600 cases of this canned corn, put up here in Ohio, were examined and condemned because the label on each can said it contained "2 lbs. of corn," where there was only about 26 to 28 ounces. Now, if the Food and Drugs Commission is going to go right through the food products in our groceries, and insist that the contents of each and every package shall correspond exactly with the claim on the label, it will be doing a wonderful work for the millions of hard-working people who get at least a large part of their daily food from the shelves of our groceries and country stores. May God help us in our efforts to see that every hard-working man, woman, and child in our nation has a "square deal."

"WE CAN SELL YOUR PROPERTY," ETC.

In our last issue, p. 23 of the advertising department, I spoke of the skill with which swindling firms are trying to imitate personal letters. See the following:

My dear Mr. Root:—I am enclosing another "follow up" letter which came recently—from an "Investment Ass'n." Please notice the superior quality of their imitation of typewriter work, and the way my name has been filled in. Possibly it is not a form letter, or, rather, it may be a form letter really typewritten. At any rate, it is well calculated to deceive any one into believing he is receiving a personal letter. I feel very certain they are swindlers, and seldom give any value. It seems to me the postoffice department should be advised of the matter, and investigate the association's methods. Packerville, Conn. E. P. ROBINSON.

In the letter inclosed (which really is a "form letter.") the words "Mr. Robinson" were so skillfully printed as almost to defy detection; and then the writer went on to tell how very honest *they* were in their methods of business, and how dishonest somebody else was. Let me quote a single paragraph:

This isn't just one extreme case. Similar ones are happening right along, and I tell you it often makes my blood boil when I hear of them. Do you wonder I am in earnest in trying to put my fair and honest plan before people as forcibly as I can? I am

glad to say that, through our co-operative system, which brings buyer and seller face to face, and agents are getting fewer chances to employ their extorting practices.

Poultry Department

By A. I. Root

THE KELLERSTRASS WAY.

Two of the weekly poultry-journals, and perhaps more (I have noticed only two) give a page or more to tell at length about Kellerstrass selling 15 eggs for \$10.00 for each egg, or \$150 for the setting. They also give a photo of the cheek that Kellerstrass received, to convince the public at large that there was no mistake about it. On page 167, March 1, I told you about his wonderful book and a great part of it was occupied in telling us how he got \$2.00 an egg for over 1000 eggs, and that his customers were satisfied with his big prices, etc. It seems, however, from the above that he is not satisfied with \$2.00 an egg; and finding that there are at least a *few* people who would "bear it," he has gone up to \$10.00 an egg. Well, if these people are really satisfied with their purchase, and think the eggs are worth it, I suppose in one sense it is none of our business. There are a few strains of Kellerstrass White Orpingtons near our Florida home. I explained to a neighbor that Kellerstrass claimed he raised 3000 pullets, trapped the whole of them, and made a selection of 30 out of the whole 3000 and the eggs he sold for \$2.00 apiece were from this choice selection. My neighbor replied, "Mr. Root, if I could be really satisfied that Kellerstrass actually did that thing, I would be willing to pay \$2.00 an egg for about half a dozen." By referring to page 303, May 1, you will notice that the wonderful book containing the account of his great and elaborate experiments in years past, "no hot air, but actual experience, mind you," after all these extravagant claims a great part of the book is simply copied from an old poultry almanac. I confess when I called attention to the matter I expected to hear something from Kellerstrass or some of the poultry journals, but not a word of explanation so far. Is that what we are to understand about the much paraded "Kellerstrass way"? If that is the "way" he does things we certainly do not want any more examples of the kind to be held up before the rising generation, and paraded as the wonderful achievements of science, etc. We are obliged to confess that he is an adept in one way—the science of getting \$10.00 an egg from people who have more money than —.

OUR FLORIDA POULTRY RANCH IN THE MONTH OF MAY.

Dear Bro. Amos:—I have overcome the trouble with soft-shell eggs. I have not found one for several days. I get three eggs now from the Buttercups almost every day. I am also having better luck now with those White Leghorn mothers; but if any other chick gets into their coop, whether large or

small, they will kill it. I have lost several that way. I find the nesting-places alive with those jigger fleas. Those were what made business for us all in the house. Lee's lice-killer will not faze them. We must use salt and tobacco. I am now getting rid of them. I have got to make some places for the young hatches. I do not think they do well crowded together. I think I will make some coops to hold a brood of 12 that I can move, and so make them that the brood can be raised and stay right in the coop for a home. I have lost several nice little Buttercups by their getting confused in moving and going to the wrong mother, she killing them. I would not keep one of those white hens for mothers if I had any others, as they are such terrors to other chicks. I keep them all shut up on that account. I have three broods now, and have to keep them separate so the chicks do not get mixed. One hen hatched 12 out of 13, and I have got them all so far. Another had 12, but one of them got into another coop and was killed.

I can easily keep larger ones out, but the small ones will get mixed if they are close together. The weather has been fine but very dry. We have no trouble in keeping things sweet on account of heat. So far it beats Arizona for climate.

I believe I am going to like chickens. I notice a yardful of Black Langshans that belong to a Mrs. Hadley, over near Foyartville. She wants \$5.00 a setting. I think I will get a setting and raise some of those big ones to take the place of an incubator. They take 18 eggs all right. We can get baled alfalfa hay here as cheap as any other hay; and if we had a cutting-box, that is the cheapest way to get green feed. Cut the hay fine, and soak it. I think they will eat it. I am going to try it on a small scale.

I get out at four in the morning and go until I get tired, and then take my nap and get dinner, and go till bedtime. But I like it, as the days go by so fast.

Mr. Root is getting up a nice big barn, and has already got the frame up. I have had trouble with only one hawk. He was after the chickens, but I got him before he got a chick. I shot him on the wing. It was a large one, big enough to carry a big hen. Mr. Ten Broek thought it was an eagle.

Bradentown, Fla., May 22.

BRO. JESS.

The above letter was, obviously, not intended for print; but I want you all to know all about the chicken business in Florida. He writes, June 3, that the three Buttercups laid 65 eggs in the month of May.

Convention Notice.

SUMMER FIELD MEETING OF NEW JERSEY BEE-KEEPERS' ASSOCIATION.

The New Jersey Bee-keepers' Association will hold a summer field meeting at Hackettstown, Warren County, New Jersey, on Wednesday, June 29, 1910. The full program arrangements are not completed yet, but it will include the following:

"Profitable Spring Manipulation in the Production of Extracted Honey," by Harold Hornor, Jenkintown, Pa.

"Increasing the Sale of Honey by Systematic Advertising in the Grocery-trade Journals," by F. J. Root, Advertising Manager of *The American Grocer*, New York.

"Suggestions on Foul-brood-Inspection Laws," by John B. Smith, Sc. D., State Entomologist, New Brunswick, N. J.

"Shall the New Jersey Association Join the National Association in a Body?" A general discussion, led by E. G. Carr, New Egypt, N. J. A vote will be taken on this proposition.

"Comb Honey," by Ralph Fisher, Vienna, N. J.

All bee-keepers in New Jersey and surrounding territory are invited.

Bee-keepers and manufacturers are requested to bring any new appliances, bees under observation, hives, or any thing pertaining to apiculture for exhibition purposes.

Hackettstown is on the D., L. & W. R. R., and can be reached from all points on that and connecting lines. Arrangements will be made for serving a lunch and refreshments.

A complete program will be mailed to all New Jersey members and any others who write us.

Pittstown, N. J.

ALBERT G. HANN, Sec.

Cleanings in Bee Culture

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Editorial

EDITOR Hutchinson speaks very highly of Dr. Lyon's new book, entitled "How to Keep Bees for Profit."

WE are now coming to the time to sow buckwheat. It is a crop that always pays. See page 7.

THE secret of preventing robbing, in removing honey from the hives and extracting it, says E. D. Townsend in the *Review*, is to prevent a single bee from going home with a load of stolen honey. Quite right you are, friend Townsend.

PROSPECTS for a basswood flow, where basswoods have not been cut, are good. From reports that we have received from various sections of the country, even if there should be a drouth checking clover, it will not greatly affect the yield from basswood. As the roots of trees will reach much deeper into the soil they will secure the necessary moisture.

POWER VS. HAND-DRIVEN EXTRACTORS.

In discussing the question of power vs. hand-driven extractors, the editor of the *Review* thinks it is safe to estimate that the former will secure at least two ounces more of honey per Langstroth comb. To be on the conservative side, he figures that there will be a gain of one pound from a 10-frame super. If we get 40 pounds of honey from such super in a crop of 20,000 pounds of honey he estimates that we would save in power extraction over hand extraction 500 pounds. On this basis an engine will about pay for itself in one year. Cleaner extracting-combs makes less of actual loss, less of excitement, commotion and demoralization of an apiary. He considers that the honey left in the extracting-combs is practically a loss, so that whatever of it we can save is a clear gain.

THE NEW EDITION OF THE A B C AND X Y Z OF BEE CULTURE.

THIS will be ready for delivery to the public in about two weeks, or about the time that our next issue goes to press. As usual, it is larger than any previous edition, containing a great deal of new matter. A large number of new engravings have been

made especially for it. Many of these are in the nature of moving pictures; that is to say, they show the successive steps of various manipulations described.

The subjects that have received additions are as follows: Absconding Swarms; Bees and Fruit; Bees as a Nuisance; Comb Foundation; Comb Honey; Diseases of Bees; Entrances; Extracted Honey; Extractors; Exhibits of Honey; Feeding and Feeders; Frames, to Manipulate; Fruit-blossoms; Introducing; Laws Relating to Bees; Pollen; Queen-rearing; Robbing; Swarming; Wax and Wintering. The following subjects have been entirely re-written: Glucose; Honey; Honey Adulteration; Sugar; Nectar; Cane Sugar; Spring Management of Bees. The general subject of Bees as Pollinators, under the head of Fruit-blossoms and Pollen, has received especial attention.

As far as possible we have sought to have all technical articles written by specialists in their particular line. For example, every thing relating to the chemistry of honey has been written by Prof. Hugh Bryan, of the Bureau of Chemistry of the United States Department of Agriculture. Dr. E. F. Phillips, of the same Department, has prepared a number of articles on technical subjects; and R. E. Snodgrass, who has probably made the most extended study of the anatomy of the bee of any scientist in the world, living or dead, has prepared the article in the appendix on the anatomy of the bee.

Taking it all in all, we have endeavored to make this latest edition an accurate exponent of every thing relating to the subject. It is probably the largest work—that is, containing the most actual matter—of any of its kind in any language. We have spared neither pains nor expense in bringing it clear up to the times. The fact that it has always been, and is yet, in standing type, so that changes can be easily made, makes this possible.

HONEY-CROP CONDITIONS.

CONDITIONS for a good flow from clover in northern and eastern States have been very favorable. At one time it was feared that drouth might cut it short, but timely rains have been reported from different sections, and it would seem at this writing that there will be at least a fair yield of first quality clover honey, and probably some basswood, during this season.

Reports from some of the alfalfa districts have been somewhat conflicting. In some portions of the West there will be a good

crop; in other portions, a partial failure. Southern California is not going to give us the honey-flow that was first expected. It is too early yet to give an approximate idea of what the season is to be; but it is evident there will be a light or fair crop of white-clover honey in the Eastern States.

A FIFTY-THOUSAND-COLONY BEE COMPANY ORGANIZED FOR THE PRODUCTION OF HONEY.

THE following letter will explain itself:

Mr. Root:—The above company has been incorporated in the State of New York, and on July 15 will start their first apiary of 1000 colonies at Kingston, Jamaica, W. I. It is the intention of the company to increase to 50,000 colonies. The Board of Directors are: J. S. Charleson, New York, President; A. B. Peters, Brooklyn, N. Y., Secretary and Treasurer; W. C. Morris, Yonkers, N. Y., Theodore Hess, Paterson, N. J., and Herman Neubert, Brooklyn, N. Y. The field work will be under the personal direction of W. C. Morris, the Yonkers bee-keeper. A large bottling-plant will be established in New York, and the product sold direct to the grocery trade. Agencies have been established in England and Germany. Any other information will be furnished by A. B. PETERS, Sec.

We wish the new company success. It is to be presumed, of course, that they will have experts, familiar with the localities, where they propose starting their yards, otherwise the venture would prove to be a failure. The experience in the past, however, has been that these large bee companies have not been successful. What the history of this will be remains to be seen.

A GOOD SCHEME FOR CROP REPORTS.

THE bee-keepers of Imperial Valley, California, are sending out blanks, "Crop and Market Report." The blanks are well gotten up, and the questions asked are pertinent and important. We hereby append a copy that will speak for itself. We would respectfully request that our readers in various portions of the country answer these questions by number on a postal card. Don't, for pity's sake, write any thing but answers to these questions, and each answer must not be longer than two or three words. When the reports come in by the thousand it is impossible to summarize them unless they are very brief.

1. Condition of bees?
2. Climatic conditions (favorable or not)?
3. Are bee-men suffering from drouth or wet weather?
4. Prospects for honey crop?
5. Compare prospects with last year, same date.
6. Percentage of full crop harvested to date?
7. Compare yield with last year, same date.
8. Kind of honey produced in your locality, comb or extracted?
9. Color of honey produced this year?
10. Price local dealers are paying for honey?
11. Price bee-men are holding for?
12. Is the crop moving readily?

THE PROGRESS OF MODERN METHODS OF EXTRACTING HONEY.

DURING the last few years a number of different honey-strainers have been devised, all of which are quite different from the usual form of strainer consisting of a large

square of cheese-cloth tied over the top of a can or tank. That so many are trying to improve on the cheese-cloth strainer is conclusive evidence, we think, that the old forms of strainers, in spite of the fact that they are so widely used, must give place sooner or later to a cheaper, quicker, and more convenient method of straining. Some time ago mention was made of gravity strainers, and a number of extensive producers have been trying them. Among these should be mentioned Mr. E. D. Townsend, one of the best authorities on extracting honey who is now writing a series of articles for the *Bee-keepers' Review*. Mr. Townsend is not a bee-keeper of the mere hundred-colony caliber, for he has a number of out-apiaries; and any tool or appliance that he uses must be capable of handling honey on a large scale. In the May issue of the *Review* Mr. Townsend describes and illustrates the implements which he uses in his honey-house, and we are glad to furnish our readers with a summary of his article.

HOW MR. TOWNSEND CLARIFIES HONEY RAPIDLY WITHOUT A STRAINER.

The illustration, p. 413, shows Mr. Townsend's very simple clarifier, which is nothing more nor less than a round tank, 22 inches in diameter and 32 inches deep, with a 1½-inch Scoville honey-gate at the bottom. The main feature of the tank is a separating float, which is a disc made of ¾-inch board, 21 inches in diameter. At intervals of a few inches on the circumference, staples are given, projecting ¾ of an inch, these staples acting as spacers to keep the float in the center of the tank, thus providing a ¾-inch crack, so to speak, entirely around the side of the tank. When honey is poured into a tank the force of the fall is likely to drive the cappings, etc., down toward the bottom of the tank; but this float breaks the fall and allows only the honey to find its way past the float down and out of the gate at the bottom. Mr. Townsend says that, when he uses this separator or clarifier, the honey is freer from fine particles than any that he has ever been able to get when using a cheese-cloth strainer.

The method of using the separator is best given in Mr. Townsend's own words, as follows:

With the separating float (previously described) in place, the tank is filled full of honey as it comes from the extractor. When pouring in the first two or three pails of honey from the extractor some particles of comb and impurities will go into the gate; so, draw out half a pail or so, or until the honey appears clear, before beginning to can. * * *

Only one or two cans of honey are drawn at a time, when the tank is again filled full. Handled in this way, with a 32-inch-deep tank and our separating float, honey is more free from particles of comb and impurities than when strained through cheese-cloth in the usual way.

The separating feature seems to work automatically, for the faster it is worked the warmer is the honey (animal heat), and the more rapid the separating of the impurities; consequently, the capacity is unlimited; or, at any rate, it will handle all the honey that can be extracted with a four-frame extractor, and do the work well.

Each night when through extracting, when the separating-tank is still full of honey; remove the

separating-float and skim the honey in the tank, and can it up, or the portion that is clear. Stop drawing when the scum begins to run through the gate; and what is left at the bottom of the tank goes with the next day's extracting.

The tank *must* be empty of cold honey when commencing the day's extracting, or the system will be a failure.

THE M'INTYRE UNCAPPING-TANK.

As will be seen by the illustration, Mr. Townsend now uses the long form of uncapping-box instead of the cracker-barrel containers that he formerly used. A comb-rack on the top of the tank furnishes a support for holding either the capped or uncapped combs, so that all drip is saved and general mussiness done away with.

Near the bottom of the tank is a slatted bottom to support the cappings. The honey which drains through runs into the 2½-inch space under the rack, and from thence out of the gate at the end of the tank. Mr. Townsend names, among the advantages of this large uncapping-tank, the greater capacity, larger drainage surface, and the general convenience, on account of there being no necessity for frequent lifting of heavy capping, changing of barrels, etc.

BEE-STINGS FOR RHEUMATISM.

DR. A. F. BONNEY, of Buck Grove, Iowa, has stood almost alone in his contention that bee-stings will not cure rheumatism. The reports have been very numerous of cases that have been relieved, if not cured, and we can not but believe that, for certain kinds of rheumatism, the stings most certainly prove beneficial. The article by one who signed himself "A Country Doctor," page 323, May 15, was written, as we happen to know, by a very prominent physician in Michigan, and one who has had a great deal of experience with different forms of rheumatism. His opinions, therefore, deserve careful thought.

In the March issue of the *American Bee Journal*, Wm. Stolley relates a most remarkable incident along this line.

A gentleman by the name of Geo. Loan, at that time the street commissioner of Grand Island, and still among the living, was suffering terribly from inflammatory rheumatism, at about 70 years of age.

For about 8 months Mr. Loan was confined most of the time, and several of our learned doctors were pumping medicines into the sufferer, and kept his legs well greased with their useless liniments; but in spite of all the doctors were able to do for him, the ailment got worse and worse. The children of Mr. Loan had heard of the "Stolley bee-sting cure," and they insisted on his giving the bee-stings a fair trial.

At last Mr. L., to please his children, consented to be taken to my farm. He was utterly unable to walk, and had to be lifted out of his carriage. The rheumatism had settled in one knee. The swelling was simply fearful, and the pain, as Mr. L. said, was terrible. He told me he had not the least faith in the bee-sting cure. I told him that *that* would make no difference as to the effectiveness of stings, and that he would not be a cent out of pocket in trying it. So I gave my patient, to begin with, 7 stings on his sore knee, and told him to call again a week later.

The next Sunday Mr. Loan was brought down to the farm again. He got out of his vehicle without help, and said, "Mr. Stolley, I begin to believe in your bee-stinging; the pain in my knee was almost gone before I got back to town (1½ miles), and, you see, my swollen knee is shrinking somewhat."

That day Mr. L. received 9 stings, and it was agreed upon that he should come again the next Sunday, when he was on hand promptly; he got out of his carriage, and walked almost without limping and said, "Your bee-stings have done wonders: why, now I want a whole lot of bee-stings." I objected to his request, but agreed that I would give him 15 stings. As it happened he received but 13 stings, while 2 went into my own fingers.

Mr. L. was under orders to call again the Sunday following. During the week I did not hear how he was getting along, but went to town on Saturday, the day before he was to come out again to my farm. The physicians in the city, of course, heard of what was going on with Mr. Loan, and watched the case closely. So, when I got to town on that Saturday, one of the doctors, who had been dosing Mr. L. with medicine, and kept his legs greased, for 8 months, approached me thus: "Say, Stolley, have you heard of Loan?"

"Answered," "No, I have heard nothing about him for a week."

"Why, Loan is dying; he has an awful fever. Look here, Stolley, if L. dies you can be held responsible for it. You have no right to practice medicine."

Now, while this conversation took place I noticed Mr. Loan coming, walking as though nothing ailed him, along the street toward us, but the doctor could not see him, for the simple reason that he had no eyes behind, and talked right on.

So I knew my Mr. Loan was all right, and not dying, and I told the "learned" doctor that I always should insist that I had the constitutional right, in this free country, to give to sick people bee-stings, if they were in need of them, and asked me to apply them, in particular since I was not charging any thing for stings, time, and trouble.

Meanwhile Mr. Loan had come up, right to where I talked with the doctor, who, being blind behind, was not aware of his presence.

At this juncture I lifted my hat, and, gravely addressing the doctor, I said, "My dear colleague, Dr. E., I have the pleasure of introducing to you my patient, Mr. Loan;" and turning to Mr. L., "Please tell the doctor what bee-stings have done for you." And he did tell the doctor:

"Why, doctor," Mr. L. said, "look here"—(and he threw out his former sore leg, and shook it to demonstrate how nice and limber it was after the three weeks of bee-sting cure—"for eight months you doctors kept me most of the time in bed, and in pain; you have filled my stomach with medicine and almost ruined it; you have taken \$200 out of my pocket for thus treating me, and only made my sick leg worse. *You are no doctors at all.* If you want to learn something about the cure of rheumatism, why, go down to Stolley's farm, where you can learn all about it."

I should like to tell my experience in bee-stings for rheumatism. Two years ago a young man came home from the rare atmosphere in New Mexico, where he was working, to die at his home here with rheumatism. He had been given up by the doctors, who told him he would die if he stayed there. I met him on the streets of our city. His muscles twitched continually like one who had St. Vitus' dance. I asked him to come home with me and work for me. The neighbors laughed, and told me he could not do any thing. I assured the young man that I had hired him in order to cure him. He said he was willing to take medicine, no matter how severe. Well, I began the first day with one sting, which caused no effect whatever, more than if he had been an old bee-keeper. In less than a week I was putting three stings on his wrist over the pulse and leaving them there. In a short time, not more than two weeks, his rheumatism had mostly all gone. But the bee-stings began to hurt. They would swell very badly. I tried to get him to keep right on until he was immune. In one month he left me, to go back to New Mexico to get his forty dollars a month. He said, "I can now cure myself there if it ever comes back."

I have cured myself of awful rheumatism twice in a few years by this treatment. I do not suppose it will cure *all* rheumatism; but if it cures some it will pay to try it on any case. I doubt if there is any old bee-keeper who has rheumatism when working on his bees; but I think it will come back to them if they stop bee-work.

Marceline, Mo., May 19.

IRVING LONG.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

DR. PHILLIPS made a delightful call on me the other day. The air about him is blue with all kinds of foul brood.

WITH HALLEY's comet out of the way and Roosevelt back home, may be we shall now have some decent weather for bees.

STINKING and non-stinking foul brood are the two kinds in Germany, and I supposed, page 371, that "stinking" was the American variety, judging by the smell; but Dr. Phillips tells me it's just the other way; "stinking" is European, and "non-stinking" is American!

LAYING WORKERS in my apiary are charged to a little sprinkling of Holy Lands and Cyprians, p. 371. No Holy Land was ever here, and just one Cyprian queen, and no queens were reared from her. My bees range from pure Italian to dark hybrids, the yellow blood predominating.

HONEY wintered at 75 to 90 degrees is not an entire success; p. 278; combs sagged, and honey cooked a little. Plainly too hot. Two winters' experience has shown that sections beside the furnace in the cellar have wintered—I think I may say perfectly. I don't know the temperature, but should guess 45 to 75°.

Nov. 15 I questioned whether one American bee-keeper in five or ten allowed no queen to enter her second winter. Rev. Mr. Burghardt, *Leipz. Bztg.*, 63, says Frank Benton was his authority for the statement there made. Possibly Mr. Benton was misquoted. Possibly I am mistaken. What is the truth about it, anyhow?

THAT viciously vulgar violation of good English, using "shook swarms" instead of "shaken swarms," is having its legitimate result in causing bad English elsewhere. Editor Hutchinson, a man civilized enough to eat with a knife and fork instead of his fingers, says, *Review*, 185, "Bees that have been shook from a comb."

NATIONAL BISCUIT Co. uses 3,600,000 lbs. of honey (125 carloads) annually. Had on hand March 26, 2,000,000 lbs. Even the best honey-dew is inferior for their use, light amber honeys seeming to retain flavors best. Wherever they use the word "honey" in naming their goods, as "honey wafers," not a particle of sugar is used, honey only.—*Am. Bee Journal*, 151.

R. F. HOLTERMANN, page 339, I wish you and Doolittle would settle the question whether a colony can be too strong May 1. I'm ready to follow the best pleader. But you'll hardly get Doolittle to exchange you his more-than-six-space colonies for six-spacers. He can do better to equalize in his own yards. At least that's the way here. Like you, I never have more bees than I want.

SAY, YOU, New Mexico Chap, page 296, if you have noticed that a $\frac{3}{8}$ entrance gives less surplus than a $\frac{3}{16}$ one, I believe your notice is out of order. You say the swarming impulse is incited by the bees filling their hive. Isn't it also incited by their being too hot? If you've noted that ventilation retards egg production, I believe your note needs repairing too. My queens fill out the combs with eggs clear down to that two-inch entrance just as much as they ever did with $\frac{3}{8}$ entrances.

FIRST CLOVER-BLOOM May 18 meant storing May 28, according to all previous rules. But cold weather prevented; and although clover was abundant, colonies were at the point of starvation June 8. Then came real June weather, and the delightful roar of bees storing, and June 13 some supers had honey in every section but the four corner ones. [We never saw a better clover flow than we are having right here at Medina at the present time; but it takes nearly until noon before it begins to yield nectar.—ED.]

A. I. ROOT, I don't wonder that you shudder at the thought of chopping off men's heads to stop poppy-growing or to stop drunkard-making, p. 394. No; I don't want to see saloon-keepers' heads taken off. Still, it might be a saving in the long run. Suppose each saloon-keeper makes only two drunkards. Which would be better, to send the one saloon-keeper unprepared into eternity, or the two drunkards? But there's a better way out. Let every good man refuse to vote for a candidate for the legislature unless that candidate is openly pledged to use his whole power against the saloon. Just so long as good men are held in such party bondage that they will vote for *any* candidate the machine names, just so long will the saloon remain in the saddle.

M. T. PRITCHARD, have you any *proof* that a queen-cell in a small cluster of bees will be better cared for than if it were caged in a strong colony? p. 389. I don't want to believe it if I can help it, for it's handier to have a lot of virgins in a nursery. But I must confess that too many virgins die in said nursery, even in the strongest colony; and if some die for want of right care, it's a question whether any get the best care; and if we are to have the best grown-ups they should have the best care when babies. German authorities, including the great Swiss authority, Dr. Kramer, insist that it is not merely a question of so much heat; that the nurses have an influence by their intimate contact with the cells; and that the loving care lavished upon the young virgin from the moment of her emergence makes no small difference in what she will accomplish in after-life. A public establishment with a hundred babies in it may have a corps of the best nurses and physicians; but there is lacking the warm, loving atmosphere that envelops the one baby in its own home. But, hold on; I'm not going to fight your battles, M. T. Bring on your proof if you have any.

Bee-keeping in Southern California

BY MRS. H. G. ACKLIN, GLENDORA, CAL.

Pure orange-blossom honey is certainly very fine—probably a trifle stronger than pure sage, but delicious, nevertheless.

It is amusing to see "bait hives" suspended from limbs of trees waiting for runaway swarms. Many apiaries are increased considerably during the season by this method.

Reports from Saugus and vicinity are to the effect that the hot winds have dried up the sages to such an extent that a crop of light honey is out of the question in that locality.

Orange honey, when not well ripened, makes a very good explosive, I understand. At least those unsuspecting freight men must have thought bombardment was indeed the order of the day, and night too, when those two carloads of tin cans, filled with unripe orange honey, commenced to explode. One can scarcely imagine honey rising so rapidly, for only the roof of the freight-house kept it from going sky-high. Every one immediately connected with the affair must have felt considerably "stuck up" for a long time. *Moral.*—Do not can unripe honey.

Who will be the first to locate an apiary on the new mountain road leading from Glendora to the fork of the San Gabriel River? This road passes fashionable mountain resorts, and will be traveled constantly by people from all stations in life, many of whom will buy honey if it be put up in attractive packages. A honey-store should be placed by the roadside so no alighting will have to be done by the purchaser. The apiary should be stationed in a side canyon in full view of the main road. It can be made a paying investment if properly handled.

Our beloved State must, sure enough, have a queer atmosphere. Bee-keepers say it matters little about the rainfall, whether heavy or light; if only the atmospheric conditions are all right a good crop of honey is almost a certainty. After a fine rain some one ventures to remark that the outlook is good for a honey crop; but the bee-keeper shakes his head dolefully and commences to talk about the conditions of the atmosphere. It makes one feel creepy. Why should California atmosphere be so very different from any other atmosphere? We surely have not a set of atmospheric magicians who can fix up the ozone to suit themselves.

When a bee-keeper comes to the conclusion that he is going to put his bees where he likes, regardless of the wishes and rights of others in the same business, he sometimes "slips up" in his calculations. One story is something on this wise. Persuasion and threats were used without avail, and the individual located where he chose. All went well as long as he remained at home; but provisions gave out, and the larder must be replenished; and during his absence his apiary was "shot-up." Honey-tanks, bee-hives, honey-house, tent—in fact, every thing was riddled with bullets. It is needless to say this last persuasion worked. The same kind of strenuousness was exhibited in another case, fire taking the place of bullets.

Mr. Geo. N. Salsbury, of Sierra Madre, is now, May 7, moving the last of his bees over to the San Fernando Valley district and locating them at three different points. He found that his apiary of 450 to 500 colonies, combined with other apiaries in the same locality, was overstocking the district around Sierra Madre. The surplus honey was extracted before moving. It is a tremendous undertaking to move such an apiary and fixtures from 35 to 44 miles by wagon, and much of the way up grade. The moving was all done in the day time—that is, the loads were started in the morning, without the loss of a colony. Three horses were used, and fifty colonies taken at each load. Mr. Salsbury claims the forage is good where he is now located, and expects a good crop of honey from the sages. The sages in many places are not yielding, but this particular locality may be an exception.

Sierra Madre appears to be a very good location for a limited number of colonies of bees. Its nearness to the mountains (for it is almost in the foot-hills) gives it the double advantage of forage from both mountain and valley. There are orange-groves and grape-vineyards in the valleys, while the foot-hills are covered with many varieties of blooming wild flowers at the present writing, May 10, including black and white sage and wild alfalfa. The white sage is not yet in full bloom; but I understand that that particular variety seldom yields nectar any way. Mr. A. Ringele has an apiary of 130 colonies located in this favored spot. He has a magnificent view of Mt. Wilson while at work, as also the valleys sweeping to the south. The larger part of his bees are in eight-frame hives run for comb honey, each of which now has two supers well filled, mostly from orange-blossoms. Forty colonies are in ten-frame hives with two extracting-supers each, all of which are well filled. This, with the later flow, if that flow materializes, will make a very good showing.

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

FROSTED ALFALFA.

Late frosts, several of them after the middle of May, froze back the alfalfa so the first growth is not as heavy or vigorous as it should be. The setback will hardly be overcome till second growth; and if the grasshoppers take that we shall be in hard lines for sure. Sweet clover was not hurt much, and the growth this year is heavy and abundant along all the ditch-banks and waste-places.

BEES WORKING ON ROSES.

I have not seen bees gathering pollen from roses, nor have I seen them tear open the buds of roses; but this morning half a dozen honey-bees were wedging their heads away down among the petals of a rose growing in our yard. It is one of the large double variety, somewhat variegated, in color of petals ranging from a pink to dark red. Those bees certainly were not after pollen, for the way they stretched out their tongues made it plain that nectar was their quest.

STRENGTHENING WEAK COLONIES.

The past winter was pretty severe on many hives that, under ordinary conditions, would come through in good strong shape. Quite a few of these have vigorous queens, but are so weak in bees that there is small chance for them to build up for work this year. By changing places with a strong colony the weak one gets a large force of bees so they can do good work. So far we have had little trouble from the bees fighting or killing the queens. As long as the plan works we shall continue, but are not yet ready to give it unqualified endorsement.

FEEDING SYRUP IN COMBS.

Of all the feeders described and manufactured, nothing works better than feeding sugar syrup in the empty combs in the hive as Mr. Doolittle tells of in the June 1st number of *GLEANINGS*. We use almost the same method as he tells of, except that we have several dry combs under the one being filled, which catch most of the syrup that does not get into the cells of the comb. The combs all lie in a tin-lined vat, so no syrup is lost. In half an hour we have filled seventy combs and placed them in the hives, no robbing being started nor the bees scarcely disturbed.

HONEY PROSPECTS FOR 1910.

To-day, June 11, the bees are getting scarcely enough honey from the alfalfa to keep up brood-rearing, and we are doing considerable feeding in several yards. White clover is in bloom, but there is never

enough of it to affect the flow very much. The weather has been too cool for satisfactory honey-gathering, and we are anxiously looking for a change to warm days and nights.

Grasshoppers are very thick this year; and unless some storms destroy them, or a disease sweeps them off, we are going to have little alfalfa bloom, after the first cutting, for the bees to work on. The grasshoppers now are about the size of a pea or bean; but they grow fast, and eat more as they grow in size. We will not give up hope till there are no grounds for hope left.

LAYING WORKERS.

Mr. Allen Latham is certainly right about the laying worker being a "a rare bird" in the apiary, though bee-keepers, no doubt, give them credit for the trouble when an undersized queen is the cause. But I have been more fortunate, if the presence of laying workers in a hive is fortunate, for I have seen as many as half a dozen laying workers at the operation of depositing eggs in cells on one side of a single comb. The operation seemed much more difficult than for any full-sized queen I ever saw laying an egg; for the laying worker, being so much shorter, could hardly back into the cells far enough to deposit her eggs at the base. The way their wings would spread out when trying to reach the bottom of the cell was amusing. After watching this number of laying workers as long as I did, there is no doubt in my mind that they were all genuine laying workers. It is the only case I have ever seen where the culprits were at work, though there have been cases when laying workers were supposed to be the cause when a poor queen may have been at fault. I am glad Mr. Latham brought up this question, for now I shall be more careful in finding the real cause.

THE BEE-KEEPER.

The editor speaks in the June 1st issue of his need of material dealing with the fundamentals of our business. The man, the location, the hive, the queen, and the market are the main fundamentals; but little has been said in the journals about the qualities necessary for a successful bee-keeper. The man is the most fundamental of all these mentioned. Energy, system, and willingness to adopt new ideas are characteristics I have noticed in the most successful bee-men. The progressive bee-keeper now knows what his market demands, and will pay him the best profit, and he has a system of work that accomplishes the most for the least effort. Every really progressive man I know in the business reads one or several journals, and up to certain limits is experimenting with some new appliance or idea that has as its aim the saving of time and effort. Some are succeeding with intensive methods while the larger majority do better with extensive methods.

Notes from Canada

By R. F. HOLTERMANN

Mention was made of a foul-brood inspector advising bee-keepers by letter not to allow dead stocks to be robbed out in the spring. D. Chalmers claims credit, and the writer hereby apologizes for the slip of memory.

THE PREVENTION OF SWARMING.

Last year I did not break up a single brood-chamber, nor remove combs of brood to prevent swarming. I have become more and more opposed to disturbing the order of combs in the brood-chamber.

THE INTRODUCTION OF QUEENS.

It required a good deal of courage for the writer of these notes to introduce a nine-dollar breeding queen by the method given, p. 313 (starving the queen for three quarters of an hour) yet I made my first plunge. A platform was laid in front of the hive upon which I would be able to detect readily the expelled dead queen. The experiment proved entirely successful.

At this date, June 10, I have fed this week to some 400 colonies about 1400 lbs. of sugar syrup; last week about 1700 lbs. of the same, and previous to that about 2000 lbs. There were not ten per cent of the colonies which did not require feeding. How is that for a spring? My bees, however, are in better condition than last year, and on June 9 were gathering clover nectar very freely. Let us hope the corner has been turned.

SWARMING CONTROLLED BY REMOVING BROOD.

Sometimes the cure is worse than the disease; and in my estimation, during a heavy flow it is inexpedient to remove much brood from the brood-chamber. The life history of the colony is so regulated that brood is reared whenever the older bees are wearing themselves out; to destroy brood coming on is to give the economy of the hive a rude jolt, and is a great and injurious waste.

SWARMING IN THE WEST.

I do not find the bees are as much inclined to swarm during a rapid flow as during a light flow, page 282, May 1. Again, with a steady flow there is less tendency to swarming than when the flow is broken; and during the days the bees "loaf" in the hive the hive is crowded with bees. I quite agree with Mr. Foster when he writes, "cold nights act as a sort of damper to the warmth of the swarming fever." In my estimation, in any locality the critical time is when a

honey-flow begins, by means of which the bees store some surplus honey, and from that time until the bees get to working well in the super; then, again, when the supers become crowded.

FOUL-BROOD LEGISLATION.

How is it that the foul-brood question has stirred up so much bitterness in so many lands? In some cases the odor of the correspondence has been almost as unsavory as that of the disease itself. The *British Bee Journal* has for some time had pages of such correspondence. One side is in favor of foul-brood legislation, while the other is opposed to legislation for the suppression of the disease. A bee-keeper in Canada opposed to foul-brood legislation would be a curiosity. I know of none.

THE SIZE OF FRAME.

When Editor Root advises deepening the Langstroth frame and using the ten-frame Langstroth bottom-boards, covers, queen-excluders, and supers, thus securing the capacity of a twelve-frame Langstroth hive, let me say I believe such a frame a better one than the Langstroth, and there is so much to be said in favor of the plan that I would not raise a word of objection. In Canada, however, the ten-frame Langstroth has not been used very much, and therefore that condition does not exist to any extent. A ten-frame Langstroth brood-chamber could be converted into a hive such as Editor Root suggests by nailing a strip all around to the lower edge of the brood-chamber. The brood-combs can be placed in the super, deeper frames substituted, and thus nothing lost.

SCIENTIFIC OR PRACTICAL.

In the annual report of the Ontario Beekeepers' Association, p. 60, Mr. P. W. Hodgetts, secretary of said association, and officer in the Ontario Department of Agriculture, states, "In regard to the scientific or practical side of the work, our college at Guelph has to be practical; at the same time they are doing very good scientific work, and there is no doubt that Mr. Pettit can follow such lines, and we can get good results from both. We have endeavored to make all the experimental work at the College practical, so that our bee-keepers, or men in other lines, can go there and see what is being done and can be done on the farm. Mr. Pettit has a tremendous field for working along scientific lines, and I am hoping he will be able to combine the two." May scientific research not be eminently practical? To sit down and figure the length of the third side of a right-angled triangle, after having been given the length of the two sides of the right-angled triangle is scientific; but to mark out such a triangle and measure the third side to get its length would, in the eyes of many, be more practical; but—is it?

Conversations with Doolittle

At Borodino

EXTRACTED VERSUS COMB HONEY.

"Which is the more profitable to produce—extracted or comb honey?"

"That is a question which probably will never be settled to the satisfaction of all, because of the different opinions of different individuals. One man will declare that he can produce three times as much extracted as comb honey, while another will be equally sure that he can secure nearly if not fully as much section honey as extracted. As a rule, both will say, when questioned, that the other does not know how to produce the one kind to the best advantage; and both may be practical honey-producers, and prove the excellence of their methods by producing large crops of the kind they are interested in. Probably the truth lies somewhere between the two extremes. A great deal, undoubtedly, lies in the locality, or, properly speaking, the environment. Very much depends on the character of the honey-flow, and fully as much on the method and the man. The *man* has very much to do with this matter, but in all probability the character of the honey-flow has more. There are great differences as regards the secretion of nectar. With only a light flow, especially when in connection with cool weather, bees will store honey in empty combs when they will do little or nothing by way of drawing out foundation in sections or building comb therein. If the nectar-flow increases and the weather gets hot, the difference grows less and less until at a certain point. I think the best methods will secure at least three-fourths as much section honey as extracted."

"Then you think that, under any condition, more extracted honey can be produced than section honey; and why, then, is not extracted honey the better?"

"If only for family use, it probably would be; but when it comes to producing honey for market, the average price of section honey is nearly double that of extracted. Of course, dark section honey sells for less than white; but the dark extracted sells proportionally less than white extracted, or very nearly so."

"Do you think that the *average* locality will give only one-fourth more extracted than section honey?"

"The generally accepted proportion of twice as much extracted as section is probably more nearly correct. However, if the extracted is so well ripened that it will weigh fully twelve pounds to the gallon, the three-fourths estimate will not be very far out of the way."

"But a man can care for a given number of colonies when worked for extracted honey more easily than he can for section, can he not?"

"Probably the advantage would be with those run for extracted. Certainly this would be the case during years past; but with our present light regarding the swarming proposition there would not be so much difference. Till a few years ago the trouble in working for comb honey, especially in out-apiaries, was the swarming. When working for extracted, with proper management scarcely a swarm will issue. But now, with a little extra manipulation, swarming is brought to a minimum, if not entirely done away with."

"But this manipulation is saved when working for extracted honey, so we can score one there. But how is it about the marketing?"

"That depends. If it is to be shipped far away to a distant city to be sold on commission or otherwise, the extracted honey would have the advantage, as this does not require the cleaning of sections nor the careful grading which is required with comb honey. Then where the extracted is sold in barrels the cost is less than for crates, and the danger from breakage is practically nothing, while there is considerable risk with the section honey."

"But suppose we sell it at home, and in small packages."

"If put into small packages and sold at retail, the labor and expense of packages bring the price nearly up to that of section honey, as such can be sold in the home market without any expense for packages, which is not so easy for extracted. If one is in a neighborhood where people will pay nearly if not quite as much for extracted, then the extracted honey would be the kind to produce."

"What would be your advice as to which would be better for me?"

"That, I think, is a question each one must decide for himself. If I were to answer this last question from my own standpoint I should say produce section honey, as I have produced very little extracted honey during the past twenty years. But there are many places where only a definite amount of honey will be used in any event, and in such a place you can sell just as many pounds of comb honey as you can of extracted. You will note that, when producing extracted honey at the rate of two pounds to one of comb, and selling it at half as much a pound, according to general quotations, you must sell twice as many pounds to receive the same returns."

QUEENS DO NOT PIPE WITH THEIR WINGS.

On page 297, May 1, F. Dundas Todd speaks of the sound of a virgin in the first part of April. I took three frames of brood from a hive of Italians to make some increase. On April 23, on looking over the new hive I heard the sound of a virgin, and, on turning the frame, I saw the queen. She would run about two inches and then pipe, working her head up and down, but her wings were not moving. Lexington, Ky., May 7. ROBERT CHARTERS.

[As to how this piping is done is a mooted question. That the wings probably do not make the noise is possibly true. That they do not vibrate when that noise is made is not always true.—ED.]

General Correspondence

THE EFFECT OF ODOR AND COLOR ON BEES.

How Insects have Altered the Flowers; Highly Flavored Honey Comes from the Strong-scented Flowers; Bees do Not Prefer any One Color, though they are Attracted More by Dark Shades.

BY PH. J. BALDENSPERGER.

Continued from last issue.

When at Jaffa, in Palestine, I clearly remarked the effect of odor as well as of colors on bees. The immense orange-gardens are grouped about the old town in a great semicircle, with the base at the sea. Arriving by sea in the months of March and April, all the air for miles is filled with the orange-blossom perfume, and, as a matter of course, also toward the land. Now, the bees of large apiaries situated in a village about three miles north of Jaffa visited regularly the gardens. They used to stream in as a river of bees overhead on calm days, higher in the air, and on windy days almost sweeping the surface to and from their apiaries in search of honey.

We all know that a bee rarely if ever gathers honey or pollen from flowers of different odors or colors on the same trip, and often they do not mix the pollens of different colors in the same cell. Is the sense of art so much developed, or is it simply because the odor of the one flower visited is so strong as to surround the worker altogether and carry her, so to speak, in a perfumed cloud from one flower of the same species to the other in order to have the aim accomplished for which odors and colors were set forth—that is to say, fertilization? Nature has lavished its agents by placing hundreds or thousands where only one or two are wanted; thus for one drone necessary, thousands fill the air; and as for pollen, thousands of insects carry it away from flowers for their own private use, leaving an infinitely small part, as they pass, in the flower expected to be in need of it.

Colors vary in the flowers, in the pollen, and in the honey; and light-colored flowers may give dark honey or light-colored honey, just as the season is dry or wet, or other atmospherical influences prevail. So the honey is sometimes granulated in the comb, and sometimes it may be very thin for some time after extracting. Here in the South we more often have thick honey, and, as a rule, highly flavored, because most honey-plants are of the highly scented kind.

As above stated, when the bees are in search of honey they are guided by odor; but when in search of a home or on the way to their hives, in large apiaries, they depend on their senses of sight. Probably they depend more on the colors of their hives than

on the shape or surroundings. Sir J. Lubbock supposes that bees prefer one color to another, and gives experience. M. Maeterlinck, too, says that his bees preferred on one occasion blue when he painted a number of hives; thus, some rose color, others yellow, and others blue. He says the swarms chose the blue ones.

For the last twenty-five years or more I have always painted my hives three different colors, and, though sometimes I have hundreds of them, I could not see that the bees showed any preference.

When there are many hives in one flat piece of country it is very useful to have them of many colors, as it is easier for the workers and the returning queens to strike their own hives without difficulty. On one occasion I had to work with about 400 hives in one square flat field. The hives were placed in rows of three different colors alternately. The bees flew out and in without hesitation. One day one of the blue rows had to be replaced by white hives. The next white row was the third one behind, the distance from row to row being about 10 feet. On returning, the bees of the third row (the white one) alighted on the first which was blue and had become white. Evidently they had noticed the blue row before, and knew that theirs was white; and, not finding a blue one, but one of their own color, they settled there, quite confident that it was their own. Encouraged (or, rather, puzzled) by this novel experience (this was more than twenty years ago), the white row was replaced by a blue one, and right away the bees went over to the third line behind their former row. This test proved to me that bees not only fix certain points in their memory, but that the color notion was peculiar to them. I can not find a preference for blue any more than for white.

Here in the Alps my apiaries are far apart, and all in rugged mountain regions. So far as this goes I lament sometimes, not as the Israelites of old, "after the flesh-pots of Egypt," but after the flowery and splendid "plains of Sharon," where I could spread my apiaries in symmetry. They are now in a line, now in ups and downs, and colors are no longer any object to the bees; yet I keep on painting the hives in different colors, not for any particular object, as I did years ago, to break the monotony and fly the national colors—red, white, and blue, even on the hives. Now I often have empty hives containing built comb. In spring these hives are often reoccupied by amateur or vagabond swarms. I had in one apiary four red hives and several blue ones; now, the four red hives were filled first, spontaneously, and the blue were chosen when there were no others. In another apiary, two white and two blue ones were filled alternately by swarms. Again, in a third apiary two hives, one blue and one white, received the visit of swarms at the same time. Finally, in another apiary with two blue and two white empty hives, the two blue

ones were preferred first. Of all this, the only possible conclusion is that bees have no preference whatever for color in hives, at least, and are more guided by odor than by color of flowers.

Our experience shows us that light-colored hives absorb less heat than dark ones; and they radiate less; but does the bee know this? Most likely it does not; and when a place to lodge the swarm in seems convenient to the scouts before the arrival of the swarm they adopt it without reflecting on the outward color. Runaway swarms sometimes build their comb in the open air along the branch of a tree or against a rock; but more often they choose the hollow stems of olive-trees, dark and warm though they be.

Notwithstanding all I have said, bees do notice dark colors much more than light ones. Perhaps light colors are imperceptible to insect eyes. I can not explain the reason, but I can point to the fact that light colors do not attract their attention, while black colors or even dark ones fairly irritate them. As a rule, when at work in the apiary I wear a white helmet as used in Asia and Africa, and rarely do the bees fly at the hat; but sometimes I go among the bees with a black felt hat; and when they are uncovered they will attack the brim at once, sometimes in great numbers. I rarely put on a veil here in Europe; and the veil, if used, is white, for the same purpose as for the hat. If in full work I would pull off the white head; the bees will attack my hairy head; and perhaps should a bald-headed man try, under the same circumstances, he would be sting-proof, just as when I pull up my sleeves to the elbows when working, yet never receive a sting on the arms. Everybody knows how angry bees become when a dog or a horse comes near the hives. It is not only the disagreeable smell, but the hairy business they dislike.

When we first begin work in the apiary, and irritate the bees in some way or other, they will be furious for some time, and then calm down again; but they will often attack, without any visible reason. This refers to our European races. With the oriental races it is often the reverse. They will be quite calm to begin with, and stand human interference for some time without showing their bad humor; but when once their patience is exhausted, nothing will calm their anger; and if you have to continue work it is best to put on a very tight veil and even gloves; for in their vindictiveness they will find any loose part and penetrate toward the more perceptible parts of your person. In the East, when work pressed hard and we could not afford to do slow work and thus avoid irritating them, we had white working clothes, veils, and gloves; but now, when the gloves become soiled the bees will attack the dark parts, but will leave off the attack when these parts are whitened by chalk or any other whitening product. Clearly enough, the dark color irritates them, more especially when excited;

and they seem to ignore white, wherever it may be. Again, I have often known them to attack my eyes rather than any other exposed part of my face, simply because these are the dark corners in the human face. This is what I think of color and odor and their effect on bees.

Nice, France, Jan. 7, 1910.

ADVERTISING HONEY IN GROCERY PAPERS.

BY F. J. ROOT.

For several years the writer has had more or less correspondence with bee-keepers as to the advantages which might eventually accrue to the industry if a systematic, liberal—yet judicious—use were made of printers' ink for a few seasons. No sensible man denies the value of advertising *per se*; but the trouble is to get the bee-keepers *beyond the talking-point*. Advertising costs money. This is an elementary statement; and when it comes to raising the "cold, clammy cash" the fraternity has been backward about coming forward.

But think what might easily be accomplished—if I may be pardoned for switching off a moment from my main topic—if a very small fraction of one cent per pound were assessed and actually paid into an advertising fund. I am informed that probably 60,000,000 pounds of honey are raised every year in the United States. This is 30,000 tons; and one dollar per ton would give you a mighty good foundation, but it is only about half large enough.

Do not imagine that I am asserting this sum to be necessary for a campaign in the grocery papers. At the beginning I want to be plainly understood as not maintaining that advertising in the grocery papers *alone* will create any increase in the general consumption of honey, which is to be the great object of all our proposed advertising. The grocery-paper advertising must be subsidiary to advertising in the big magazines which reach millions of housewives; and I wish to emphasize the words *must be*. The advertising in the magazines is absolutely essential; and with such backing you can spend a little part of your fund to excellent advantage with the grocery papers.

Run over in your minds the retail grocers with whom you are personally acquainted. What sort of men are they? What sort of grocer would *you* be? If you read the grocery papers, what sort of advertisement would cause you to "stop, look, listen"? The average retailer is a pretty good sort of chap. He likes to be well thought of—being human—and he likes to have a reputation for selling good goods at a reasonable profit.

In urging the dealer to make a little extra effort with honey, and using the grocery papers as a tool to work with, you want to tell him that you are making a big campaign in advertising honey to the consumer through the media of the big magazines; that this is

bound to cause more call for the article from his store, and it is up to him to have a nice assortment of the goods.

Then tell him that honey affords a good living profit; that it is eatable every day in the year, and his sales will not stop in August or December, or "in months without an R."

The two points above mentioned can not be put in too strong language—*well advertised, salable goods.*

You all know that the live retailer exerts considerable influence with the housewife. If he will exhibit a nice box or bottle of honey, and *bear down* upon the point that it is the best table delicacy that money can buy, he will almost inevitably make a sale because his own exertions will have been preceded and helped by the advertising in the magazines. And the more honey he can sell, the more money he can make, and this money is what he is after.

Lastly, the dealer's advertising should give him a little talk about the merits of honey something like the advertising to the consumer.

Then the retailer, knowing that honey is being widely advertised; that its sale is bound to increase by reason of this advertising which is going to be kept up; that its merit is universally recognized; and that it will pay him a living profit, will see the necessity of pushing the button. He can't afford *not* to hustle, for he will find his competitor making a specialty of the article he is neglecting.

There are grocery papers and grocery papers, and I have been reading them—good, bad, and indifferent ones—for 25 years. Were I to separate the sheep from the goats—and the teddy bears which are neither—there would be a small flock of the creatures whose pedigrees I have been rather familiar with. In these I would use a liberal space all the time, and in this space I would have reading matter which would be a heart-to-heart talk with *intelligent* dealers. I would have the matter changed often, and I would have some *nice* small illustrations of honey in its different forms and on different tables from prince to pauper. I would have the best location the paper would give me, and I would seek the friendliness of these journals in all legitimate ways.

The use of honey in this country, I believe, can be more than doubled. It is seldom seen on the city table, and one reason for this neglect arises from the fact that bee-keepers in some respects are not like bees, because the latter *get busy*. Raise the money to pay for advertising, and in due time you will be able to emulate the Owl and the Pussy Cat who

"went to sea

In a beautiful pea-green boat.

They took some honey and plenty of money
Wrapped up in a five-pound note."

No one or two or three of you can afford the expense. You must form an association; and the membership—which ought to embrace all who are looking after their own

best interests—should be a *unit* in raising the money. It should be cheerfully given, and the utmost confidence should be extended to those having the matter in charge. Never was truer saying than "United, we stand; divided, we fall." *What are you going to do about it?*

Newark, N. J.

BEE-PARALYSIS.

More Information Wanted Concerning it.

BY J. O. SHEARMAN.

One of my neighbors, a noted bee-keeper of this place, says he recently received from Washington a voluminous report telling all about foul brood in all its stages; but it was of no use to him, as he was already familiar with it. What he is watching for is something definite in regard to bee-paralysis. He has been investigating a little on his own account, and has found that the Italians in his case are more subject to this disease than the others. Now, this seems to be directly opposed to the opinion of others who have reported. What is the true state of affairs?

My neighbor does not say that *all* Italians are more subject to paralysis, but that those were which he had after introducing queens from a certain locality.

GENERAL CONDITIONS OF DISEASE IN CALIFORNIA.

There is more or less foul brood scattered all over this part of California, and some pay no attention to it. I hear that one man who owned 1200 colonies in apiaries in three counties left some foul-broody frames and combs scattered about when he moved his outyard away from a point near here, and some of them were picked up by others and used. The inspector does not come very often, and so nothing was done about it.

HONEY PROSPECTS IN CALIFORNIA.

The weather was pretty dry in February and in part of March; but during the last of March we had two big rains that came slowly enough to soak in and not run off. The sage has started to grow, and both white and black are doing well. The orange is just now coming into bloom, and is set very full.

Pomona, Cal.

[Italians are probably no more subject to bee-paralysis than any other race; but it has been shown that this disease can be transmitted through a queen received from localities where that disease exists. What your neighbor reports is probably true. All colonies showing any trace of bee-paralysis in a queen-rearing yard should be promptly removed to an isolated location or destroyed. Since your report was written, later reports seem to show that the season in Southern California will probably not come up to expectations.—ED.]

FOUL-BROOD SPORES MIXED WITH HONEY IN THE SAME CELLS.

Why are Blacks Immune to Paralysis When Italians are Not?

BY W. A. H. GILSTRAP.

On p. 146, March 1, E. M. Gibson asks if any one has seen honey and American foul brood scale in the same cell. Perhaps not; but it is there, however; or, to be more exact, let us say the spores and honey are mixed in the same cells. Six years ago I had a hard fight with the disease under unfavorable conditions. In my best yard, while uncapping honey, the knife would frequently cut through the ropy stuff right in the sealed honey. Had it been left it would have changed to spores and still have been in the cells with the honey, although not noticeable. The honey was put into cans, and the next winter I ate some of it, and, although it had been so rank in the summer, no epicure could see, taste, or smell any thing wrong with it. Some of the honey was boiled five minutes under steam pressure after being diluted one-half, and fed to bees with the best of results; but it requires so much care that I can not recommend the average bee-keeper either to eat it or feed it back to bees. The combs spoken of above were melted and the wax sold. Some men would be almost sure to scatter foul brood when melting the combs.

Friend Gibson's experience is so different from mine that I am much surprised. While we both live in California, our conditions may be no more alike than Ohio and Germany. My bees did not hesitate to put honey into infected cells in strictly wholesale order.

Before I got entirely rid of the disease I made some experiments which would have been entirely out of the question at the first general attack. I do not know how many queens I caged from diseased colonies, and introduced in the usual manner to healthy stocks in the same yard, using ordinary shipping-cages; but in no case did I contaminate the healthy stocks by so doing. How could it do so? The utmost care was observed to have the feed healthy in the cage.

A very convenient way to cure foul brood is to transfer the diseased bees to healthy combs of honey in early winter, when no brood is being raised and the cure is complete. If honey is daubed on the hive while transferring, it is certainly not expensive to scorch the hive a little; but I doubt if it is often necessary. The honey, or nectar, which is usually thrown out, is fresh and healthy. Where bees are shaken into hives of starters I have never found disinfection necessary, even where considerable new honey was shaken into the hive; but we can not risk honey on the outside of the hive, as it *might* make trouble with other bees.

European foul brood is within 100 miles of me now, or nearly so. It may never get here, or it may reach me at any time; so to

be on the safe side I must Italianize every thing, so if it does reach us no great loss need be feared. Even if the Italians should be no more immune they are not a bad proposition any way. I have often wondered why Italians are more subject to paralysis than any other bees I ever saw, and yet so immune to European foul brood. Some deny this; but I never noticed paralysis where there was no Italian blood. The paralysis means no disastrous loss as compared with foul brood; but often a colony is weakened in an aggravating manner. Having tried so many strains of three-banders I doubt if any of them are immune to paralysis as are blacks, Cyprians, and Carniolans. I have never tried the goldens. Syrians (Holy Lands) are too cross to be considered, while pure Carniolans' swarm too much to be considered for outyards. Carno-Italians are a splendid bee; but I fear black brood, if it appears, would mean speedy disaster with them. In other localities these conditions would probably be different.

Ceres, Cal., May 5.

Queens Laying in Old Cell Cups; do Bees Move Eggs in a Colony where there is a Queen?

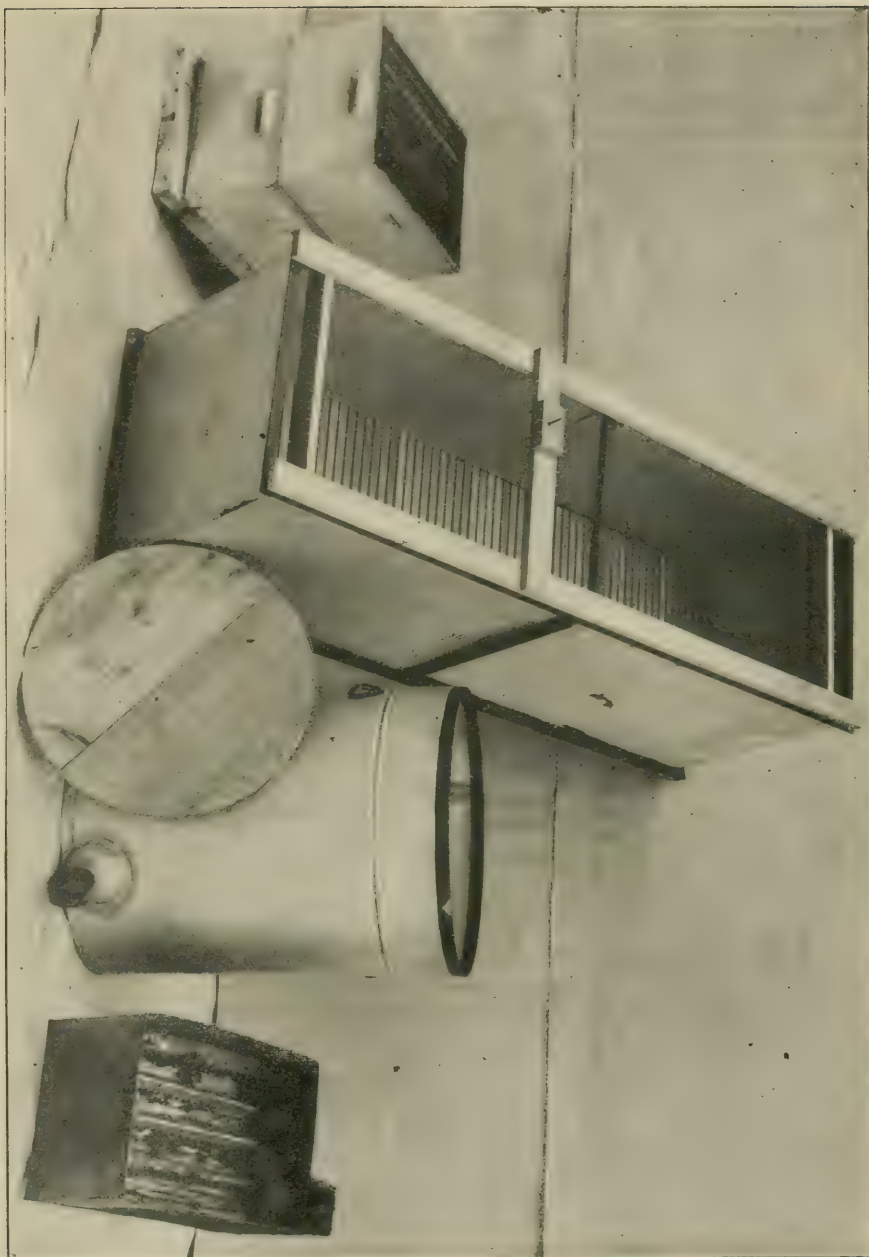
Dear Ernest.—I have run across something in the bee line that is new to me, at least, although it may be as old as bee-keeping itself. On the 10th, while looking through one of my hives I saw several old cells, mock queen-cells, with thick walls, and built on the edge of combs full of sealed brood. The cells seemed to have been recently worked upon; and on looking into them, what was my surprise to find an egg, upright and in the proper place, in the center of the bottom of the cell! At first I thought it was evidence of a fertile worker; but, search as I would, there was no other evidence. I think I found three of those old cells, each far away from eggs or young brood, yet with a properly placed egg in each. All were destroyed. To-day I again looked through the same hive, and found four or five more old cells that seemed to have been recently worked upon, yet very plainly showing the unmistakable thick cuplike base of an old cell, and in each was the properly placed egg as before. These were not near young brood. On further investigation I found several young queen-cells started on young brood in the orthodox way. The queen was found somewhat shrunken, and the colony was evidently preparing to swa in.

What I want to know is this: Will bees under the swarming impulse take eggs from regular cells and place them in old queen-cells? That was what it looked like to me. I do not think the queen *laid* the eggs where I saw them. The queen is getting old; and could it be that the bees were trying to make sure of another (in case the old queen died suddenly) by transferring eggs to those old cells that their apian brains told them were for queen-rearing purposes? I believe you proved that a broodless and queenless colony would sometimes steal eggs from which to raise a queen.

Fort Casey, Wash., June 2.

E. H. SARGENT.

[From all the facts presented, it is evident that the colony was preparing to supersede its old or failing queen. Whether the old queen was a party to this propaganda we can not say, but apparently so. It is not uncommon to find eggs in these old cell cups when a colony is under the swarming or superseding impulse. In that case the queen will lay in these little cups wherever she happens to find them, even if they are remote from any unscaled larva. While queenless bees might take eggs laid elsewhere in a hive and transfer them to the cells in question, yet in this case, where a queen was present, it is doubtful. One can usually tell whether an egg has been deposited in a certain position by a queen or whether placed there by worker bees. There is no doubt that bees do move eggs under certain stress of circumstances.—Ed.]



IMPLEMENTS USED BY E. D. TOWNSEND IN HIS LATEST METHOD OF EXTRACTING.—*Bee-keeper's Review*.
SEE EDITORIAL.



BEE-KEEPING AS CARRIED ON IN ENGLAND.

BEE-KEEPING IN ENGLAND.

A Glimpse of Several Apiaries Showing how the Work is Carried on.

BY JOSEPH TINSLEY.

I am forwarding to you several photographs of English apiaries and bee-keepers, with some interesting information, in the hope that many of your bee-men will be pleased in seeing how we carry on the industry in the old country.

The upper view, p. 422, shows the apiary of Miss Baggeley, Swymerton, Stone, Staff. Miss Baggeley is one of the many successful bee-keepers in England. Her occupation is housekeeping at a large farm house, and in her spare time she attends to the bees. The three frame hives are of the "W. B. C." pattern. A glimpse is also seen of the old-fashioned skep, and the same is fixed in the photo in the manner in which it is adapted for supering. There are still a number of these primitive hives in England; but their numbers are rapidly diminishing as the growth of scientific bee-keeping continues. As an exhibitor this lady has been singularly fortunate, winning many medals and prizes. She always gets one shilling per lb. for her honey—about 25 cents.

Mr. J. Cooper, Rose Cottage, Petsall, whose apiary is shown in the middle view, is situated on the borders of a large industrial center. He is not located in the best district for bee-keeping, but nevertheless in 1908 he secured from five hives 300 lbs. of superior honey. An excellent photo is shown of his Wells hive, for which he has great admiration.

The lower view shows the apiary of a more extensive bee-keeper, Mr. George Evans, Bromstead, Newport, Salop. Mr. Evans is employed on a large estate as woodman, and in his spare time he attends to his bees, consisting of some twenty colonies. He is one of the most successful exhibitors we have, and has won quite a number of medals. Situated in one of the best districts in the county, he produces comb honey of exceptional quality. To show how successful he really is, he averages from the sale of honey about £50 (\$242), and £5 (\$24) in prizes. Single one-pound bottles he sells at 25 cts. each, while for 1-lb. sections of comb honey he rarely receives less than 32 cts., and, as he says, he could sell more each

year if he had it. It is good news to hear that he has never been able to fill all the orders he receives for honey.

In the separate view is shown one part of Mr. J. Tildesley's apiary at Tamworth, Staffordshire. As will be noticed, Mr. T. makes his own hives from boxes. He has only a few squares of ground at his back door, being situated in the center of a town; but he manages to keep three hives here. The remaining colonies are situated in the open country. An idea can be got from a method of spacing the frames. The brood-box, you will notice, has ten frames properly spaced for brood-raising, while a larger "spacer" is fixed on the shallow bars, reducing the number to eight.

Stone, Staffs., England.

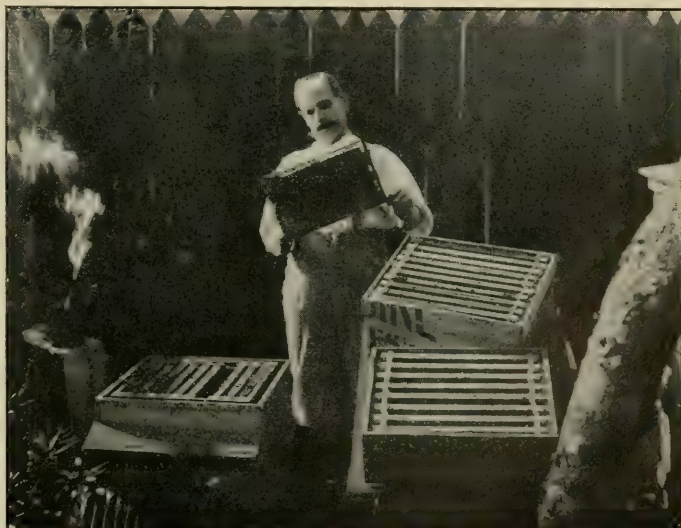
CAN COMBS AFFECTED WITH AMERICAN FOUL BROOD BE FREED FROM DISEASE?

A Scheme to Get Rid of Disease by a Large Force of Young Bees.

BY HENRY STEWART.

[Some time ago the writer of the subjoined article wrote, stating that he had discovered a method of cure for foul brood that he thought was very valuable, and wished to know how much we could pay him for a series of two or three articles. We told him to send them on and we would later write him what they were worth to us. They came duly to hand, and, after a careful perusal of them, we decided that he had something worth presenting and offered him our top-notch price. The first of the series is here given.]

The writer, Mr. Henry Stewart, an expert bee-keeper, is one of the most extensive producers in the United States. If what he says had come from a smaller bee-keeper with lesser experience we are frank to say that we might have dismissed the whole matter as hardly worthy of attention; but we know Mr. Stewart too well to believe that he



MR. J. TILDESLEY, AN ENGLISH BEE-KEEPER WHO MAKES HIS OWN HIVES.



ONE OF HENRY STEWART'S APIARIES AT PROPHETSTOWN, ILL.

would exploit any thing of this kind unless it had real merit. In a word, his general scheme involves the principle of making sick colonies extra strong, and saving all combs, no matter how badly diseased. Apparently, if a hive has a large force of young bees it may be possible for it to clean infection from combs that are fairly rotten with it.

We are not so enthusiastic as to believe that Mr. Stewart's method of cure is going to revolutionize our methods of treatment for foul brood. So many things have looked good in the past, apparently were good, and turned out to be failures after all, that we confess that we are becoming more and more conservative. For the present, at least, we lay this treatment before our readers with the hope that many of them, who will be in position to do so, will give it a trial and report results.

If we can save not only the bees, honey, and the hives as well as the combs, and yet keep right on producing a crop of honey, it will be worth millions to the industry. We therefore solicit a most careful and unprejudiced reading of this and the article that is to follow.—ED.]

American foul brood can be cured without the loss of a particle of healthy brood or of a single diseased comb, and without interfering materially with the production of honey, a laying queen being on duty at all times. Now, if I had read this a few years ago I would have doubted it; but I have had considerable experience with the disease, and I began with the orthodox treatment, following the advice of the best authorities. I shook the bees on foundation, melted up the combs, steamed the frames, and burned out the hives of hundreds of colonies. When the Alexander treatment came out I had much faith in it; and as soon as possible I selected several good strong colonies, removed the queens, and watched the results, expecting to requeen, at the proper time, on healthy combs; but the process of cleaning up seemed to go on all right until the last end, when, at the expiration of 28 days, the evidence of the disease would be gone with

the exception of a few scattering capped-over cells. I continued with some of these colonies until they were reduced almost to nuclei, and yet they would not uncapped and clean up these cells. My next move was to take some of these nearly cleaned-up combs, and get them above queen-excluding honey-boards over strong colonies. I then found that the combs were quickly filled with honey, and the diseased cells cleaned up, so that all appearance of the disease disappeared. Afterward I extracted the honey from the combs and gave them to healthy colonies to be filled with brood, the result being healthy combs.

One September I discovered near the shop in my home yard a queenless colony, weak in bees, with the combs badly affected with foul brood. At the time I was taking off honey, and, as usual, I removed the supers with the bees in them and carried them to the shop, letting the bees leave the combs and pass out through exits in the screens and so return to their hives. Frequently there would be clusters of young bees that would not find their way back; and to keep up the strength of this one foul-broody colony mentioned I often dumped these clusters of young bees in front of the entrance, expecting to destroy the combs later and give the bees to some colony which needed them. This, however, was neglected, and a little later I went to Massachusetts with a carload of honey and was gone several weeks. When I returned I expected to render those foul-broody combs of this one colony at once; but, to my surprise, the brood was perfectly healthy. These same combs that were almost filled with disease were now cleaned up. Therefore, instead of consigning the

combs to the wax-press I hunted up a colony that was weak in bees and united the two on these cleaned-up combs. This colony wintered well and bred up strong and healthy the next spring. This test was a severe one, as the combs were in an advanced stage of the disease; but they were cleaned up after the close of the honey season—something that I did not at all expect.

As is my custom, about the first work that I do in the spring is to inspect every colony by removing one of the center combs and looking for foul brood; and when I find it I mark every diseased colony. This year but very few diseased colonies were found.

On page 39, Jan. 15, Mr. Chas. Stewart, in criticising Doolittle's advice on foul brood, says, "I have seen so much trouble come from feeding back honey taken from diseased colonies, even though it was boiled, that I have always advised against it except in the hands of an expert." I should like to cut out the last clause of this advice and then emphasize the rest. I will give a little of my own experience. Several times I have boiled and fed back infested honey without bad results. One year I had quite a lot of honey from diseased combs saved from the year before; and about May 1 I set my hired man to boiling it up and we fed it to the bees. Soon afterward I found my home yard badly diseased, and I was desperate. To shake the bees meant cutting the surplus honey crop in two, besides lots of work, when I was needed elsewhere: so I decided to do no melting of combs, but to run these colonies for the honey they could produce, regardless of the after-effects. At that time, before the white-clover bloom, there was but little honey in the hives. There were a great many combs free from brood or unsealed honey. I reasoned that many of them might be free from infection, so my first step was to take from one colony all the frames containing brood and proceed with them to some other colony and take from this second hive all combs apparently clean, and replace them with the foul-broody ones; then put the foul-broody combs back in hive No. 1, and give to this first colony the clean combs from both hives. In this way one of the colonies was given the advantage of a clean set of combs while the other had double the amount of brood. I tried quite a number in this way, the result being partially successful. With the colonies that had the clean combs the majority remained clean, although some of them contracted the disease in a mild form. The other colonies, that is, those that were given the double amount of brood, soon became very strong.

My experience of previous years in getting combs cleaned up, both honey and brood, caused me to go further, and I made a lot of special honey-boards for the purpose. They were made like ordinary queen-excluding boards except that they were solid wood with the exception of two rows of queen-excluding holes extending lengthwise across the board. I placed these boards on strong col-

onies. I shook the colonies on to foundation first, and then placed the combs above these honey-boards, to be filled with honey after the brood had hatched and the cells were cleaned up. Then, after extracting, I exchanged these cleaned-up combs for other sets of foul-broody combs, and in the process observed this result—that the colonies made strong by additional brood seemed to suffer no more from the increase of the disease than did others which had no foul-broody combs above the brood-chambers. The clean-up process was so successful that I continued it as fast as I could; and to hold the disease in check in other colonies I put queens on clean combs. Other queens I put on foundation, and then put foul-broody combs above my peculiarly constructed honey-boards. I had all kinds of results. In many cases I was successful; but a few contracted the disease in a mild form, while many queens would sulk and the force of bees go above and start queen-cells. Some of the queens disappeared. The honey season being a good one I secured a very satisfactory crop of honey at a yard well stocked with extracting-combs, and all the hives were comparatively free from foul brood in the fall. This was four years ago, and in this yard of 200 colonies I have scores of sets of these cleaned-up combs in the brood-nests that are in use to-day.

Last August Mr. W. B. Moore, foul-brood inspector, visited this yard, and I took him to a row of twenty colonies fitted up for extracted honey, with the queens having free access to all the combs. These twenty hives are of a different shape from the rest of my hives, and I know that every set of combs that they contain have been foul-broody. He inspected them thoroughly, and could find no trace of the disease, in spite of the fact that there was a honey-dearth at the time.

Prophetstown, Ill.

Continued in the next issue.

DRUGS VS. TREATMENT.

Curing Foul-broody Colonies by Immersing in Carbolic Syrup.

BY JOHN W. LOWRY.

I have recently waked up to the bee-keeping world. While I have always kept bees to supply my own table with honey, for the past fifteen years I have turned my attention to other things, and have not been reading the bee-journals. I read the A B C of Bee Culture 20 years ago, and was very enthusiastic over the bee business at that time; but other things caused me to lose much of my enthusiasm; but it has been aroused again—I think for all time. I am now reading GLEANINGS regularly, and have your 1908 edition of the A B C and X Y Z book. I awake to find foul brood in its two forms still the worst drawback with which the bee-keeper has to contend. I had some experience with this disease fifteen years ago (the



CHITTAM (*Cascara sagrada*), SHOWING THE BLOSSOMS AND LEAVES, ONE-SIXTH NATURAL SIZE.

kind prevalent at that time). I had two colonies, while in Florida, of pure Italians, which were badly infected with this disease. I made a study of the disease, and hit on a remedy that completely cured my bees with very little trouble or expense.

One thing I used in my medicated syrup was carbolic acid. I made a thin syrup with granulated sugar and hot water, then added my chemicals; stirred well in a large dish-pan. When it had cooled to about the temperature of fresh milk I took the pan to one hive, took the frames, one at a time, and immersed them completely in the medicated syrup, bees and all, then set them back in the hive, and so on until all ten frames had been immersed. I then put on the cover, which did not take as long to do as it does to tell how it is done. I then took a small strainer I had made of wire cloth; dipped the bees left floating on the pan of syrup, and placed them on the alighting-board. The bees then buzzed around and sprayed the front of the alighting-board, and all inside the hive, with the thin syrup on their wings; also the few bees left on the inside walls of the hive got a thorough spraying by the immersed bees crawling and buzzing among them. Strange to believe, but the bees thought the best way to get rid

of this syrup was to eat it, and they did so; and if it hurt any of them I never found it out. It was then in their stomachs, on their backs, in the cells, all inside the hive, everywhere a bee would go.

Then the other hive was treated in the same way. This was done late in the afternoon. In six days I gave the same bees another immersion, the same as the first; in six days more, another—three in all—job finished.

In these treatments I never looked for queens. They went under with the rest. (This is not Bible immersion, but foul-brood immersion.) I believe this treatment will cure both kinds of foul brood. I kept the same bees on the same combs year after year, and it has now been 16 years, and my present stocks are descendants of those diseased colonies, and I have never seen a trace of the disease since.

Grenada, Miss.

[The plan you describe, of smearing combs and bees with carbolic-acid syrup, was thoroughly tried by us some fifteen or eighteen years ago on some fifty-odd colonies that had real foul brood. We secured the best carbolic acid we could obtain; tried it in a syrup, and then in the form of a spray, the acid with water in the proportion of

anywhere from five to ten per cent. Our diseased colonies were fairly doused with it, time and time again; but in every case, sooner or later foul brood would reappear.

If there is any thing we think has been proven during the last fifteen or eighteen years it is that carbolic acid in the proportion of only about five per cent strength will not cure foul brood. Recent evidence has come to our knowledge that a colony suffering from only *dead* brood will, under some conditions, show all the symptoms of a real foul-broody colony. The dead matter will rope, and will have the characteristic foul odor; but it is not foul brood. If you had a case of this sort, the colony would have recovered just as soon without any application of carbolic acid. The probabilities are that the liberal feeding of syrup stimulated it to the extent that they were able to recover from the shock of dead brood. Bacteriologist Dr. White, of the Bureau of Entomology, we understand, put microbes of foul brood in five-per-cent solutions of carbolic acid. These microbes (*Bacillus larvæ*) continued to thrive for months at a time, showing that carbolic acid had absolutely no effect upon them. While it would kill them when stronger solutions were used, yet such solutions would kill the bees.—ED.]



CHITTAM BLOSSOMS, NATURAL SIZE.

FORMALDEHYDE-SULPHUR TREATMENT OF FOUL-BROODY COMBS.

Is it Wise to Rely on Drug Treatment?

BY J. G. GILSTRAP.

In GLEANINGS for March 1 are several valuable papers on foul brood and European foul brood. I have as yet never had any personal experience with the latter disease; but I have had some experience for about eight or nine years with American foul brood.

E. E. Pressler, page 141, referring to Mr. Alexander, quotes him as saying, "The old American foul brood is incurable. You can save the bees by the McEvoy treatment; but you can not save the combs." . . . "I wish to have it understood that I do not think that, up to the present time, there has ever been a comb that was affected by American foul brood cured of that disease.

. . ." Well, I hate to stand against such testimony. I am sorry Mr. Pressler and Mr. Alexander were so unfortunate in their efforts; but my personal experience has been to the contrary of their views.

I believe it was eight years ago this summer that I made some progress in curing and actually eradicating American foul brood and saving the combs. I saved many combs and used them afterward, with no bad results.

I prepared a box about four feet square each way, hinging a close-fitting door in one end. I made the box air-tight, or as nearly so as I could; and after a number of quite successful treatments I selected a strong

two-story hive that was well supplied with brood—about fifteen frames of it; but I think fully one-fourth of this brood was rotten. Oh such a terrible mass as it was! I removed the queen and bees into an empty hive on the old stand; placed the two-story diseased hive, together with a lot of other infected material, in the aforesaid box, and placed a pan of coals in which I put nearly a teacupful of sulphur; then in another pan I set two formaldehyde candles burning, and closed the door. In about five hours I opened the door, put in another charge of both sulphur and formaldehyde. In a few hours I opened the box, and on examination the combs were "frosted" with the sulphur, and very strong of the gas. I marked that particular hive and super, and then examined the broody combs. I found that *all* the rotten foul brood that was stringy and ropy before treatment was now changed to a granular form; it would not string out, nor adhere to a straw, stick, or pin; it was more of a crumbly nature. The next day I selected a healthy colony—one of the best in the apiary; and, clipping the queen, I threw the bees and queen in this two-story treated hive containing brood-combs and honey (ten-frame hive), and for two or three days the bees were rather obstinate about not remaining, but finally went to work. I kept these particular combs with this same hive and bees, and after more than one year from then no trace of foul brood ever showed up in that hive, when I quit keeping further track of it. I *know* American foul brood can be cured; but I think it is rarely accomplished.

I have done no experimenting on these



YELLOW SWEET CLOVER, SOWN IN NOVEMBER, AND IN FULL BLOOM THE FOLLOWING JUNE.

lines for about six years; but I shall take the matter up again this year if I find any foul brood of consequence, having this spring been appointed inspector of apiaries for Stanislaus Co.

E. M. Gibson, page 146, throws out a challenge that I wish to call him on. He says, "I have never been able to find honey and scale in the same cell. Has any one?"

Yes, I have, and in many hives. I have found on brood-combs that were filled with honey, and nicely sealed over, many cells that would look a trifle darker and more sunken, usually, than those around them; and on examination would find the foul brood in the bottom of the cells unmolested except for the honey filled in on it. These cells of infected brood contained the rotten mass in all stages from ropy to dried-down product.

I can name several persons, seven or eight, that have observed this same thing often in this county.

Ceres, Cal.

[Some five or six years ago quite a number of our correspondents were enthusiastic over this method of disinfecting combs affected by American and European foul brood. The earlier reports seemed to indicate this plan of fumigation as here outlined was effective. But later reports showed that the general scheme was too unreliable, and that combs badly infected could be disinfected by means of formaldehyde or formalin, only in a clos-

ed chamber under the most favorable conditions—conditions that the average bee-keeper, either from lack of knowledge or lack of proper facilities would be unable to apply. In the second place, if this kind of treatment for disinfection of comb were sanctioned by the bee-journals, many inexperienced persons would make the attempt to disinfect them, and the result would be that their bees would be reinfected, because nine people out of ten would only make a failure of the plan. Experience has shown that, where such combs contained a little honey, no amount of fumigation in a closed box would kill the microbes covered by the honey. It was also shown that sealed brood, brood that had died from disease, could not always be reached through the cappings. Failure to kill the microbes in a single cell of a comb would mean, of course, reinfestation, probably, to any colony to which such combs might be given.

General reports show that drug treatments in nearly all cases are an absolute failure. The sooner bee-keepers let them alone the sooner they will get brood diseases under control.—ED.]

CHITTAM AN IMPORTANT HONEY-PLANT.

BY P. W. NICOLLE.

During the past year I have noticed some discussion regarding chittam (*Cascara sagrada*). As chittam is our chief source of

nectar, perhaps a few words in regard to it would be of interest.

Throughout the timbered regions of Western Oregon and Washington, portions of California, and of British Columbia, this is one of the most important honey-producing plants. The honey made from it is of a medium to light amber of delightful aroma, and possessing none of the cathartic effects of the bark of the tree, which is taken here by the ton and sold to dealers in its dry state at about 5 cents a pound. When the honey is fully ripened it is too thick to extract successfully, the combs breaking, and the honey not flowing readily enough to secure as much as possible with other varieties. The flow from this source is just commencing, the accompanying illustrations having been made from blossoms secured yesterday, May 14.

In most places where honey from this source is secured it is a difficult matter to get it in a pure state as there are so many other nectar-producing plants and trees. For instance, the vine-maple flow is just closing; wild blackberry is producing very well; huckleberry, salal, and thimbleberry are producing something, and white clover is just coming into blossom.

Mapleton, Oregon, May 15.

YELLOW SWEET CLOVER SOWN IN NOVEMBER, AND IN FULL BLOOM THE FOLLOWING JUNE.

BY A. I. ROOT.

[The following was written for the new edition of our booklet on sweet-clover growing; but being of general interest to bee-keepers at this time, we decided to use it here.—ED.]

June 14, 1909, Mr. Philip Bohley, a man in our employ, brought me a stalk of yellow sweet clover 5 ft. tall, covered with bloom. He said the plant came from seed that he sprinkled along the roadside in November the fall before. He did not notice whether the seed came up in the fall or not. All he could say was that there was no sweet clover in that place the year before. The circumstance was so remarkable that myself and Ernest took a trip there to see it; and the picture adjoining is supposed to be myself standing among the sweet-clover plants. I took off my fur cap and donned Ernest's hat, and that is one reason why I do not look natural. The matter was mentioned in GLEANINGS for July 1, 1909, p. 418, and I then inquired if anybody else had secured a successful stand of sweet clover, either white or yellow, when the seed was sown as late as November. Several letters informed us that the same thing had been done by sowing the seed in August and September, but none as late as November. Mr. Bohley says the horses grab for it every time they go past it. Remember this seed was not in cultivated soil, nor had any effort been made to cover the seed in any way. It was just scattered along the roadside adjoining his own premises. If this thing can be dupli-

cated it would seem to indicate that yellow sweet clover will furnish a large amount of good food for stock, or for plowing under, in a shorter time than any other legume or any thing else.

THE LONG-IDEA HIVE FOR EXTRACTED HONEY.

BY GEO. SHIBER.

I have been interested in the articles by F. Dundas Todd that have appeared in GLEANINGS of late, especially the one on p. 439, July 15, 1909. He says he is preparing to raise extracted honey—that he has adopted the eight-frame width of hive, and that he has cool nights during his honey-flow. To this last point our friend says he has given long hours of thought. He also says he does not feel that he has in any wise arrived at a solution. I began my bee experience 23 years ago, and I have been doing the same thing every year, thinking and planning, then often finding that I had reached no solution. He also says he has adopted the divisible hive. Now what I am about to say is the outgrowth of experience in many plans which I have tried; some have been good, others bad.

Let's analyze the above combination.

1. Extracted honey.
2. Eight-frame-width hive.
3. Cool nights during flow.
4. Divisible hive, 5¾ inches.

1. In raising extracted honey we must have a large hive. Many times we must have the equal of thirty to forty L. frames. Now pile up those shallow (5¾-inch) cases until this capacity is reached. You will then have a tall narrow pile, at night the heat radiating from the sides and ends (it's ¾ inch, probably); so the extra-warm cover he uses will not amount to much to prevent the cooling of the super part of the hive. What happens in a hive when this occurs? Why, the bees draw down, down, to the brood-nest, leaving the supers nearly or quite bare of bees. Surely this is not the right condition of affairs for the securing of a maximum yield. I might say right here, that, as I live in New York State, and he in the extreme Northwest, perhaps our locality being different the plan might succeed better than the one I recommend.

2. Eight-frame width. This would be objectionable, as it would increase the radiating surface over the ten-frame size.

3. Cool nights. If the nights are cool during the flow, the hive must be made warm enough so the bees will occupy all the super room which they occupy during the day, that the nectar may be properly ripened.

4. These would, I think, be better ten-frame width; but we will drop the part for the present.

Most progressive bee-keepers know of the "Long-Idea" hive. It is not new; in fact, it was very old when I began reading bees in 1886. Let me name some of the advantages of this hive for extracted honey. The

one I use is 40 inches long; 5 to 6 inches higher than the standard hive, and the same width. This will hold 28 Hoffman frames comfortably, equal to $3\frac{1}{2}$ eight-frame bodies. There is a space of about five inches above the frames for quilt and packing—that is, the frames go down into the hive 5 inches. Notice the large surface protected on top of the frames—800 sq. inches—while Mr. Todd's hive would have about 250 square inches thus protected. This hive has an immense advantage over the standard hive during the building-up period in the spring. Let the queen occupy all the frames she will—the more the better; then as the flow continues the brood-nest is contracted down by the bees and queen toward the center of the hive, and honey follows the emptying of the cells by the brood. Mr. Townsend described this contraction of the queen at the close of the flow so she is gradually crowded down into the brood-chamber. He was talking of the ten-frame hive; but how much nicer it is accomplished with the "Long-Idea"! I use the standard frame in this hive.

Another point. If you should want to look into the brood apartment during the time supers are on, no lifting off of heavy stories, simply take off the cover and help yourself. It may be said that one should not disturb the brood-chamber of strong-storing colonies. True; but there are times when one is obliged to; for instance, a queen falls down, and a swarm with a virgin comes out. Now, to return, the swarm-cells must be destroyed, and you have to lift off the stories.

I do not think bees in one of these hives will be as likely to swarm as they will in eight or ten frame hives tiered to equal capacity; and now I am very sure more honey can be secured with this hive than by using the eight-frame body or the eight-frame $5\frac{3}{4}$ -inch body.

I am very sure the bees do not have to (so many of them) remain at home to heat and ventilate the hive, and they can, I think, get out and in quicker. Colonies of equal strength will send more bees into the field than it will in the eight-frame size.

I think there is a whole lot in this case of ventilation where they are all on one level, as all parts of the interior of the hive are near the entrance.

I know this form of hive is not extensively used. Mr. Poppleton, of Florida, has always advocated it in his writings, and I suppose he is using the same hive still; but if my memory is correct he does not use the standard frame.

I do not think this form would be liked for comb honey at all. I certainly should not like it for that purpose.

Where nights are cool (and we have many here), that thoroughly protected Long-Idea hive seems to give the largest yield, every thing else being equal. I know they give more surplus.

Randolph, N. Y.

A SIMPLE SYSTEM OF BOOK-KEEPING FOR HONEY-SALESMEN.

BY WESLEY FOSTER.

For the average bee-keeper who sells his crop to the home stores or those of near-by towns, the need of a simple yet accurate method of keeping track of orders and accounts is felt. Here is a plan that will answer in most cases where the business done is not extensive. Order-books with carbon paper for making a duplicate of each order are used. Books, $3\frac{1}{2}$ by 6 inches, containing 100 sheets, or enough for fifty orders, may be purchased for 50 to 60 cents per dozen books. (Sheets 5×8 inches are better, but the smaller size will do.) The books are printed with spaces for date of sale, date for delivery, terms of payment, and the buyer's and seller's name and address. These should always be filled in carefully and legibly. They are just as important as getting the right number and grade of goods down on the lines below.

Now, when delivering honey the original order-sheet is used as the buyer's invoice to send with the goods. If the goods are sent C. O. D., the original bill or invoice is marked "Paid" on receipt of the money. The

BOUGHT OF		
Charles Bates		
BOULDER, COLO. <i>Jan. 6 '10</i>		
When Deliver <i>Feb. 1 '10</i>		Terms <i>Cash</i>
<i>Geo West</i>		
<i>Denver</i>		<i>1400, Boul. Fr.</i>
1 Case #1 Comb Honey		3.50
2 Cases #2 " " #3		6.00
1 Doz jar honey (10¢)		.90
		<i>#10.40</i>
<i>Paid</i>		
<i>Feb. 1 - 1910</i>		
<i>Chas Bates</i>		

bill should be marked "Paid" before being torn out of the book so as to make the duplicate copy correspond with the original, which is given the buyer as his receipt for the money paid. The name and the date should always be written under the word "Paid." This makes the bill a receipt that will stand a legal test.

If the bill is charged, the original copy is given to the buyer as his invoice, and he signs the duplicate copy in the book. The duplicate sheets should all be left in the book, as they can be kept track of better when fastened together. Afterward the "Paid" bills may be torn from the order-book, leaving only the charge accounts.

BOUGHT OF			
Charles Bates			
BOULDER, COLO. <i>Jan 6 '10</i>			
When Deliver		Terms	
<i>Feb. 1 '10</i>		<i>30 days</i>	
<i>Wm Lockhart</i>			
<i>Denver</i>		<i>213 15th St</i>	
1	<i>Case #1 Comb Honey.</i>	<i>3</i>	<i>50</i>
1	<i>" #2 " "</i>	<i>3</i>	<i>00</i>
1	<i>Dog Pint Mason Jars</i>		
	<i>Honey</i>	<i>2</i>	<i>40</i>
			<i>8.90</i>
<i>Wm Lockhart</i>			
<i>Feb. 1st 1910</i>			
<i>Received in good condition</i>			

These duplicate sheets show a complete history of the transaction as far as it has gone. By going over the book or books—if there are several—one can find when payments are due, and send statements of the accounts. A check-mark should be made on each duplicate or charge sheet so it will show that a statement has been rendered. If a second statement is sent, two check-marks are made. As remittances are received for the goods, the duplicate charge-sheets must be marked "Paid," then torn out and put with the other bills that were paid on delivery. It is well to keep these old bills, for by reference to them one can know what kind of honey the customers are handling.

The advantage of this system is that on one sheet of paper the buyer's name and address are preserved as well as the date of sale, the date of delivery, the terms of payment, and the signature of the buyer showing he received the goods. If he paid on delivery the seller marks "Paid" in place of the buyer signing for the goods.

This is a simple method, and will work with quite a large list of customers. The order-books that have the carbon paper fastened are best; for if the carbon paper is loose it will get lost some day and the orders will have to be copied twice. The order-

books are just as valuable if the honey is sold right from the wagon for cash, or charged. Make out the order, give the buyer the original, marked "Paid" or "Charged," as the case may be. If "Paid," the buyer has a receipt; and if "Charged" the buyer's signature is on the duplicate sheet in the book.

There are some faults with this system, but it is better than trusting to memory or just memoranda put down in a note or account book. If you have no system in handling your honey sales, try this one a while. It will save a lot of worry.

Boulder, Col.

ANOTHER WHO PREFERS THE BLACKS.

BY T. B. MOWRY.

Black bees are hardy, and adapted to our northern climate.

The queens are not over-prolific, which is a favorable point in regard to swarming, and, consequently, of storing comb honey.

They will enter supers readily, and stick to them until filled solid with comb honey of the best shape and style, and the most of it of any race that I have tried.

They are much easier manipulated as regards swarming of any excepting Banats, and my blacks outdistanced my Banats last season at least a half in comb honey.

They are the least liable to sting of any that I have ever had.

I have never tried Caucasians nor Carniolans, but have tried Banats, various strains of Italians, and crosses of different kinds; and for real comfort and comb honey I have never found any that came up to the blacks; and, as I wrote you not long ago, by cutting out drone brood and queen-cells once in a season they stored over 100 lbs. of comb honey, and no swarming, while my others gave not over half that amount of honey, and some less than that. The blacks have always come in far ahead of all others that I have ever tried.

COMB HONEY PRODUCED AT THE SIDE OF THE BROOD-NEST.

In regard to larger hives and shallower frames, page 307 and 313, May 15, 1910, allow me to say amen. I am using eleven frames, 6½ in. deep, in a regular ten-frame hive, with an entrance at the side. A colony of blacks stored over 100 lbs. of comb honey last season, and I have never handled a hive that pleased me as that does.

In regard to Italians that are apt to crowd the brood-nest, why not get at least a part of the comb honey at the sides, and widen out the nest to hold more frames? I have practiced it a good while, and can get some comb honey in very poor seasons when I could not get any in the supers; and I catch fruit-bloom in that way when I could not expect any in the supers.

Now as to swarming, did you ever get the idea that it could be largely prevented by cutting out the drones and not allowing any to hatch? I have been experimenting on

this swarm of blacks; and cutting out the queen-cells and drones once in a season does the work, and that, no doubt, was a factor in getting over 100 lbs. last season. Oneco, Conn.

THE ITALIAN VS. BLACK BEE.

Italians Ahead of the Blacks in Most Points.

BY GEO. SHIBER.

I have read with much interest the article on page 296, by Mr. D. M. Macdonald, of Scotland, on the merits of the black bee. Of course, we have read all these points, pro and con, in regard to the German bees in years gone by, as all the journals have discussed them over and over again; so have also the good and bad qualities of the Italian bees been laid before us in the same way.

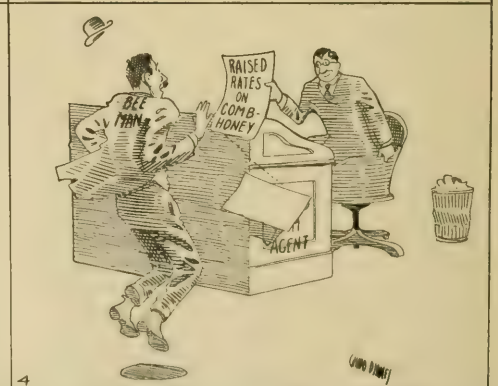
To consider fairly which bee is best for us of all the races, it is well to inquire what we want them to do—to work them for extracted or comb honey. If for extracted honey, the white cappings of the blacks cut no figure; but we do want them to build up strong and to be good honey-gatherers. Now, then, that is about the whole of it, and also, I will add, gentleness, which the Italians have. They are not panicky under manipulation.

I never saw a single black colony that was not; and if they are smoked enough to subdue them so they can be handled as comfortably as Italians they will be simply scared to death and pile out of the hive.

Now for extracted honey. I have tried them long enough to be satisfied that the Italians have the blacks beaten by a long sea mile; and, again, hybrids are away ahead of black bees. I might say right here that my experience has been that the hybrids are far superior to either race for comb honey; but for pounds of extracted honey the three-banded Italians are entitled to the palm. Mr. Macdonald says they are a "soft" race there. I know there is a difference in them, of course. We shall find a choice among the choice in every thing.

This spring I bought three colonies of a farmer, one of which was, I think, pure black. Well, now, it was interesting to note, on a cool morning when but few bees were flying, the blacks would be the slowest to come out of the hive.

Oh, yes! if we had nothing but black bees in this country we could still do business "keeping bees," and we should have honey to sell too; but would we enjoy handling them as well? Of course, if the blacks went away ahead of them, that would be another question.



WHAT IS LIKELY TO HAPPEN IF COMB HONEY IS SHIPPED WITHOUT BEING PROPERLY PACKED.

Now, lastly, why does not some enterprising queen-breeder go to raising black queens and offer them for sale, if they are superior or even equal to Italians?

Twenty years ago I saw many advertisements in the journals offering Cyprians, Syrians, etc., for sale; but these have been crowded out, as well as nearly all others, by the Italian bee; and these could not have held this almost world-wide prestige were it not for the fact that they possess merit.

Robbery? Oh, yes! Why did not our friend mention that beautiful characteristic of the blacks? and if some of the things we are reading about of late in regard to black brood be true, that Italians are immune, then I for one feel safe in keeping my Italians, which are mostly pure, and which I have bred up to such a point that I know just about what they will do under certain conditions. There is a good deal, my friends, in being acquainted with your bees.

Randolph, N. Y.

PREVENTING AFTER-SWARMING.

BY H. E. HARRINGTON.

After-swarming is a nuisance to any bee-keeper. The swarms are generally small and valueless, and the parent colony is ruined for honey production, so after-swarming should be prevented if possible. Suppose the bee-keeper is producing comb honey, and is indifferent to increase. He gives section room as fast as his bees need it; but a first swarm issues in this case. I think it best to hive the swarm and place it on a new stand, as I think as much honey will be obtained from the two as from the one without swarming, as this satisfies their natural desire, and they will work with all their native energy. But after-swarming should be prevented in every case; and the best way is to remove all surplus queens from the parent colony. It is a bother to have a second swarm issue. The young queens are smart on the wing, the swarm does not settle quickly, and often alights in a difficult place; but it must be secured and returned, or the parent colony will produce no more comb honey.

I think it is a good plan to examine the parent hive the evening after a first swarm has issued, so as to know something of the age of the cells. Do not remove any of these, as they will be rebuilt. But about four or five days after the first swarm has issued (according to the age of the cells), listen at the hive every night and morning. Place your ear against the rear of the brood-chamber so you can hear the internal sounds of the hive. The bees are stiller just at night and in the early morning. If the colony intends to cast a second swarm, the first-hatched queen will utter a cry which

sounds thus: "Key, key, key," quite often. Another unhatched queen will respond the same, only in a hoarser tone. This is the proper time to operate on the parent hive. Select the time of day most convenient, as robbers are not generally troublesome at this time. Get another brood-chamber (two are better), the same as the parent hive, with honey-boards or sacks to cover the same if there is any robbing. The young queen very rarely enters the sections, so these can be removed and set aside. Raise a frame and hold it a few feet from the hive so as to hear the queen should you have her on this frame. Place this frame in one of the empty hives, and so with all the rest. If the queen is located, place this comb in the other empty hive. The last comb may be thoroughly examined for cells. Have the small blade of your knife sharp, and remove every cell. Place these on a hive-top.

May be some of the queens are just gnawing out. If they are good stock they can be saved. After cutting off all cells that can be seen, shake the bees into the old hive and again examine the comb for more cells. This comb might be turned bottom up so as to see the cell ends. Remove all cells, capped, uncapped, or hatched; look sharp, and be thorough. Do this to all the combs as they are returned to the old hive. See the young queen safe in the old hive. Keep your eye on the removed cells, as queens are pretty sure to come out. Cut open every cell, as sometimes a queen emerges from a cell, leaving the cap hanging to one side. A worker will enter the cell, and another worker will seal down the cap and imprison this bee. On opening this cell you will find a dead worker with its head at the bottom of the cell, the reverse of the queen.

You should have a queen for every cell but one. If more than one there are two queens in the hive, and a swarm will surely issue. It might be a good plan to cage all queens you find hatched and on the combs, as you might return one and have to look her up. If you have two queens in the hive you must look one up. Leave only one. It is a good plan to listen the evening after operating on a hive. You might hear the queen, but she will soon stop if no other queen is in the hive. If you hear two voices you must look up one of the queens. I think this is the best and easiest way to prevent after-swarming. If you should hear no queens after listening a week or more, examine the hive. If you find a cell open on one side there will be no more swarming. You need not listen over five minutes at one time. You will soon get so you can do this in a short time—at least I would rather do it than return a swarm; and you would have to do it if you wanted the swarm to stay. Out of 25 hives operated on I generally have but one second swarm. You should examine the parent hive about three weeks after the first swarm issued, to see if the young queen is laying.

Lyndon Center, Vt., Jan. 29.

Heads of Grain

from Different Fields

Some Questions on Keeping Bees in an Attic.

I have kept bees where I had plenty of room for the hives, but expect soon to move to a city lot where there is neither room to set the hives, nor, I think, neighbors who would be pleased to have bees in the back yard. But there are two gables, one on the north and one on the south side of a large attic chamber. As I understand it, the idea is to give the bees so much room that they are kept busy continually, trying to fill their hive, and so have no need of sending out a swarm. I should like to get advice. First, can I keep bees in this attic without their swarming? If so, how? By giving extremely large quarters? Should they be given all frames, and the honey extracted, or can I use sections also? Can the bees work as well from a hive in the third story as from one on the ground? Which side should the hive be set—south or north? What breed of bees will do the best work in one of these upstairs hives?

WHY NOT IMPORT STINGLESS BEES?

I read some time ago that there is a stingless bee in Mexico. Is this true? If so, can they bear the cold of a northern winter? If they can, why don't we import lots of them? If the bee could only be induced to leave its sting behind, and forget to have one, every one would have a hive or two of bees. Ten times—yes, a hundred times, the amount of honey would be eaten if it could be purchased conveniently, or "home grown."

KIT CLOVER.

[We expect to have a series of two or three articles on how to keep bees in garrets. In the mean time we venture to say that colonies should be strong, and the hives in which they are placed should be ample in size. That means tiering up as fast as or faster than the bees need room. If they are at any time cramped they will swarm just as quickly from a garret as they would if the hives were placed on the ground.]

Yes, bees can work as well from a hive in the third story as from one on the ground; and why not? In the natural state we find them in tall trees, and in rocks on the ground or near the ground.

We recommend the Italians rather than any black race. Carniolans and Caucasians will swarm when Italians keep right on working; at least, that is our experience. There may be some strains of old-fashioned black bees that will swarm as little as Italians.

It would never be practical to domesticate stingless bees in our northern States; and even if we could do so they are much more "holy terrors" than bees with stings. With their powerful mandibles they can bite; and while that bite is by no means as severe as a sting, yet when one has several hundred of these little rascals in his hair, each pulling *one hair*, he is inclined to believe he would rather be stung, kicked, and pounded to death than to have a lot of stingless bees after him.—ED.]

Why Did the Honey Melt when the Temperature was so Low?

My strongest colony this year is hybrid—Italian and black. To-day I looked for this colony to swarm, and therefore placed an Alley trap. About 1:30 P.M. I noticed something wrong, and lifted the cover off the hive. There were two supers on the hive; and as the cover came off, the bees rolled out of the top super in a black sticky mass. After a minute the queen came out too. All the honey had been taken out of both supers, and apparently spilled over every thing. The second super was drenched, and dead bees lay thick on the sections. On top of the brood-frames dead bees lay almost an inch thick, all seemingly drowned in honey. The bottom-board was a mass of dead bees and honey, so that the entrance was choked though the honey was thin enough to run out on the ground, which it did. There were no sealed queen-cells in the hive. The day was sunny but cool; temperature 64 F. in the shade.

In all I think about one-fourth of the bees in this

hive were drowned in honey; but a great many more were lost by trying to force an entrance into other neighboring hives, where they were killed in great numbers. In my ten years' experience in bee-keeping, the above is unique; and I can not imagine the cause. I hope you can throw some light.

Aptos, Cal.

J. W. W. MACDONALD.

[This is a clear case of suffocation. In some unexplainable way the entrance must have been closed. The probabilities are that, in applying the queen-trap, you put it on in such a way that it closed the entrance almost entirely. In the case of a powerful colony, abnormal heat would be generated very soon—heat sufficient to melt down the combs and kill the bees.—ED.]

Does a Queen or her Colony Give a Warning Two or Three Days Before a Swarm Comes Forth?

Swarming is a frequent occurrence in this locality. Perhaps it may be of some benefit to tell you how I know when a swarm is going to issue. Go out early in the morning and put your ear against the side of the hive. If the colony is going to swarm you will hear "toot, toot, toot, toot," inside the hive. Some say it is two queens fighting; but I believe it is just the queen calling her bees to fill up their stomachs with honey. It will not be over three days before the swarm issues, depending on the weather.

Dacula, Ga.

O. E. BUCHANAN.

[While it is possible that a swarm might give a preliminary "toot, toot, toot," we think that, in the great generality of cases, they do not give any such warning. We know positively that sometimes swarms will issue without any preparation. Sometimes the queen will lead forth, and sometimes the bees; but more often the bees will go forth followed by the queen. On one particular occasion we remember hearing a long "zeep, zeep, zeep," in front of a colony where we were standing. The bees shot out of the hive like shot from a gun, and with them the queen in the vanguard; but we have been present hundreds of times since, in front of hives when swarms would come out, and have never heard that preliminary "zeep, zeep," and in almost all cases the queen was among the last to come out with the swarm.]

If it is a fact that a colony that is preparing to swarm will give the signal of "toot, toot," or "zeep, zeep," two or three days beforehand, no one has reported it up to this time. We shall be glad to hear from our subscribers as to whether they have ever observed any thing similar.—ED.]

Plaster of Paris a Sure Cure for Rats.

I followed the meat-market business for nearly 16 years in my younger days, at the old home in Wisconsin, and was greatly plagued by rats around our slaughter-house. This was during and just after the civil war. Well, to get rid of them, and not have them a stench to my nostrils, was a study. I tried to kill them off with a shotgun, and did kill hundreds in this way; but they kept coming just about as fast as we killed them, so we did not gain much by shooting. About this time one of my friends advised me to try plaster of Paris, mixed half and half, the same as your correspondent mentions; but I did not set a pan of water near them, because there was a good-sized creek close by. If I should tell you that I and one of my men picked up and buried a bushel basket of dead rats within ten days after giving them the meal mixture I don't think I should be stretching the truth a particle. I was obliged to repeat this about four times each year to keep the pests down. It is an absolute cure; but look out and do not set it where chickens will get into it, as they will eat it with just as good an appetite as the rats do.

Missoula, Montana.

J. M. PRUYN.

Combs Melting when Entrance was Contracted for Only a Short Time.

A few years ago my hives were in a room facing east. For some reason I closed the entrance of the south hive down to a bee-space, intending to enlarge it in a few moments; but I was busy at the other end of the yard, and it was some time before I returned. When I did get back the honey

was running out of the hive. How the bees and honey did come out of that hive! I don't think there was a dry bee among them, and I thought the whole colony was gone up. On taking off the cover I found every comb in its frame; but every one had let go of the top-bar and settled down on to the bottom-bar, the wires holding them upright. After the bees had cleaned themselves up they soon repaired the damage to the combs, and I don't think I lost over a handful of bees, and two or three pounds of honey. I want my frames wired, although I don't think I'll do a trick like that again.

Brooklyn, Ia.

A. BATCH.

Young Bees Coming Out of the Hive and Dying.

The trouble of which I wrote you seemed to be entirely in the young bees. Hundreds could be seen at the entrance, dying, and weak, while on real warm days, about noon, they would come out, attempt to fly, and drop in the grass. They could not rise. I watched these bees closely every day, and I noticed that every bee in the grass had defective wings. Their wings were apparently very short, or not over three-quarter length. There were also some signs of dysentery in the grass where the bees were crawling around, but no signs of it on the alighting-board or in the hive. Perhaps this was brought on by excitement while trying to rise out of the grass. As nearly as I could ascertain, their defective wings caused the whole trouble.

I am glad to say now that the trouble has entirely disappeared, and the colony is apparently all right. The queen is very prolific. I might say that, during this trouble, I found one queen-cell nearly capped. Evidently the bees intended to supersede the queen; but as the trouble was disappearing I cut out this cell, and no more have been built since, or at least had not been a few days ago.

Ruscomb, Ont., May 23.

C. A. YORKE.

[It is very clear that your shipment of bees was overheated *en route*, resulting in "scorching" or "cooking" the brood, as we call it. If a colony is suffering for want of air, either by closing the entrance or because the entrance is too small, the inside temperature of the hive will go away above the normal. While this does not necessarily kill the brood, yet in almost every case we find afterward, if the bees were not killed outright, that the young bees will hatch out with defective wings, and will be otherwise imperfect. Of course, such bees are not allowed to live in the colony; and if they do not walk out themselves, the other bees force them out.—ED.]

The "Shook" Plan of Swarm Prevention.

I have a colony of bees that is preparing to swarm, and I should like to prevent it. Will the shook-swarm plan, as described on pages 347 and 348 of the A B C book, work in my case? The colony has the queen-cells about one-third completed, and there will be no honey from clover for three or four weeks. You say in the A B C book that it should be done after the honey-flow has begun. I am looking for a good flow from locust in about a week or ten days. I am looking for them out in less than a week. I had two swarms yesterday.

Harrisonburg, Va.

JAS. S. BOWMAN.

[The shook plan of controlling swarming, such as is described in the A B C and X Y Z of Bee Culture, would be fairly effective in the case described. It does very little or no good to shake before the bees show symptoms of swarming; that is, start swarming-cells.—ED.]

Bottom Ventilation Prevents Swarming, Even of Colonies Run for Comb Honey.

There is quite a discussion going on about the prevention of swarming by ventilation. I have tried to my entire satisfaction the scheme of bottom-board ventilation, and it works. Just at the beginning of the honey-flow, raise the hive from the bottom-board about $\frac{1}{4}$ to $\frac{1}{2}$ of an inch, and cut out all drone larvae. That entails a little work, but it pays. Small apiarists can do that easily; but the man who has 600 or more colonies to look after as I have can rely on the ventilation alone. I have tried it in comb-honey production only, but it surely ought to work for extracted honey.

When the flow is over, the apiarist must lower the brood-chamber again because of robbers.

Wasco, Cal., May 22.

M. S. PHILLIPPE.

Shaking to Prevent Swarming.

Where can I obtain an uncapping-fork such as is used in Germany? I want to experiment with it. What do you think of it?

With good swarms at \$2.00 each, and sugar at 5 cts. per lb., is it better to buy or raise bees?

I am watching the discussion on shaking energy into bees; and if, as some claim, a change of residence is all that is necessary, would not the putting of empty combs above or below the brood-nest, allowing the queen to work into them, be as good as shaking the bees on to these combs, provided they do not swarm out? But what makes them swarm out any more in the one case than in the other? Is the mysterious effect due to the excluder, the shaking, or both? Do you think that the shaken colony (brood above excluder) will gain more, either in brood or honey, than one in which the queen is allowed to work down?

Which grain is nearest to pollen in composition? Would it not be the best for a substitute for brood-rearing?

St. Mary's, Ont., Can.

J. H. BURNS.

[For a German uncapping-fork we would refer you to Emile Bondonneau, 56-58 Felix Faure Ave., Paris, France.

Under some conditions bees can be raised very cheaply from sugar syrup. Some experiments made by Mr. W. A. Selser showed they could be raised at \$2.00 a colony or even less. The advantage of feeding would be that you would get fresh stock from choice queens, while stock that you would buy at \$2.00 might be very undesirable.

Your questions in regard to shaking we would respectfully refer to some one who has had more experience than we have.

Finely ground pea meal is said to be the best substitute for natural pollen. Rye flour is very fair, but no substitute is equal to the natural article itself.—ED.]

An Easy Way to Get Extracting-Combs Cleaned.

To produce a good quality of extracted honey it is necessary to get the extracting-combs cleaned out nicely of all honey that naturally sticks to them in order to have them clean and sweet for the next year's crop. To do this I remove the Porter escape from the boards. Place the boards on the hives and then place several supers containing the extracting-combs on these boards. This being done toward evening, and left on a few days, the bees go up and clean the combs, and carry the honey below, with no robbing, and no damage to the combs. In a few days, by raising up the end of the pile of supers the escape can be replaced in the board, and in a short time the supers can be put away for the winter.

Some may say this plan is too much bother, and too slow; but really it is not, for by using ten or more escapes, and six or seven supers (I use shallow frames) on each board or hive, the cleaning goes on while we are at some other work. It takes only a few minutes to put the supers on the hives.

Hilbert, Wis.

GEO. A. CRESSY.

Baling-wire to Support Foundation.

I am using baling-wire for splints. It comes in straight bundles for baling hay. I cut it up the right lengths, and heat it just enough to melt into the foundation.

Terre Haute, Ind., May 25.

J. D. SMOCK.

[We see no reason why baling-wire could not be used to support foundation in the manner described. We suggest that a good many of our readers try it and report.—ED.]

Another Sure Case of Bees Stealing Eggs.

This is my second year with bees. I started last year by buying two three-frame nuclei and increasing to six. These were pure Italians. This year I have increased to twenty colonies. I bought four swarms from parties near me and put them in Danzenbaker hives.

On April 18 I bought a swarm of native black bees from a neighbor of mine and put them in an observatory hive. I had trouble in getting them into the hive, for I had to sprinkle them with water and dump them on the alighting-board; and as they dried off they went into the hive. I was too busy to look at these until May 2, two weeks later, when I found that the colony was queenless. The swarm was a small one—not over five quarts of bees. Now

comes the peculiar part. On one frame there were two sealed queen-cells; on another frame two sealed queen-cells, and one cell on each of three other frames, which made seven sealed queen-cells just two weeks after hiving the swarm.

There was not an egg nor a larva in the hive except these seven queen-cells. If the queen went into the hive with the swarm and laid these eggs, why should she not lay more than seven? and why should she lay them on five different frames? What became of her?

I hived the swarm on the 18th, and on the 20th I worked in my apiary two or three hours. During that time I had frames of brood and eggs, examining them all the time. The queens that hatched from these cells were Italians. Does not that prove that bees will steal eggs?

Mt. Pleasant, Ala.

JOSEPH S. SCOTT.

An Apiary of Badly Confused Bees; What Caused Such a Wholesale Loss?

We took over an apiary the 15th of March which was in poor condition, yet good enough so that we thought that about 80 or 106 colonies would come through. We left them in the hands of the previous owner to care for them for two months. He was equalizing the colonies at the time of the purchase, and had equalized about sixty. We had him stop this, as none of them were strong enough to stand any loss. He neglected to see to them further, however, which fact we discovered in spite of his assertions to the contrary in about a month and a half. We then took charge, finding about 60 colonies, some in fair condition, with a queen and two or three frames of bees. They kept getting weaker in spite of a banner spring. The more we did for them the worse they got; but it was little we could do. The numbers were less each week. We looked until May 1. Only 25 colonies were to be found. Now there are but 10, and we do not expect to find them next time, although they have five and six frames of brood.

The bees were moved from a poor location near a stream about the first of March, and placed on a hillside. They were placed very near together—a foot or so. We understand this to be a poor plan, yet I have seen in GLEANINGS photos of yards so laid out, which the owner, I believe, claimed to have had good success with, for I concluded that the total destruction of an apiary would not result from such a plan.

We found the bees badly confused. Four or five queens were found in one hive with a dozen bees or so. Queens were running around on the ground with eight or ten bees after each. Hives which had, at our previous visit, some bees and brood and queens, were found deserted, with brood chilled. In short, the entire apiary seemed crazy. It was not always the small colonies that were found missing by any means. Now we know something about spring dwindling—what it looks like, I mean. We have had bees abscond after shipment, and because of too large entrances when the swarm was small. We have seen some results of bad or too old queens; but we do not know what to think about a whole apiary of 100 colonies being completely demoralized.

I might add that we saved some of the queens and put them in other apiaries, where they did very well.

We do not mind the loss of the bees; but we should like to get some clue as to what was the cause if we could. I presume we ought to know, but we don't.

Our own bees (we have some nine outyards) are doing better than in any year we ever have had, so we are pretty sure it could not be the weather.

Lander, Wyoming, May 23.

H. P. DYAR.

[From your general description it is a little difficult to decide the exact cause of your trouble. There are some symptoms that would indicate paralysis; and there are others that indicate European foul brood. The fact that you speak of chilled brood or dead brood, and the further fact that the whole apiary seems to be running down, rather point to a brood disease of the European type. In the process of equalizing, such disease will be, of course, greatly aggravated, as the infection would spread from hive to hive.

Generally it is a mistake to put hives close together; but this could not account for the general and wholesale depletion of the whole apiary. It might result in some colonies being overstrong, others very weak, and the loss of some queens.

You say that four or five queens were found in one hive with a dozen bees or so. This is a very peculiar (not to say unusual) combination.

We might suggest further that the bees had been working upon trees that had been sprayed with poisonous mixtures; but after the spraying season was over the survivors ought to recover speedily, providing the queens had not been destroyed.

Taking it all in all, we confess we are unable to give a satisfactory answer; and if any of our subscribers, located in the vicinity or elsewhere, can throw any light on this we should be pleased to have them do so.—ED.]

Excluders with the Bee-spaces Running Crosswise of the Frames.

In regard to the honey-boards, I think the Hed- "break-joint" idea would be right for wood wire excluders slatted lengthwise (or wood-zinc excluders either), if all bee-keepers spaced their frames alike. But they don't. Some—probably most—jam the first Hoffman frame right up against the wall of the hive. Others, using more care and sense, leave a full bee-space there. Then there are others—myself among them—who prefer a spacing of not less than 1½ in. from center to center. In actual practice I have a variety of spacings on account of having a miscellaneous outfit of hives and frames, and an inclination to project and experiment. I am decidedly of the opinion that, in the above styles of honey-boards, openings instead of slats should be next the outside rim.

I am well satisfied, however, that any style of excluder is better with the openings crosswise than with them lengthwise. The easiest way for the bees to get up through excluders is for them to walk up the side of a frame and through a convenient opening in the excluder. When the openings run crosswise they are sure to be convenient, no matter what the spacing of the frames may be. Consider the matter—think of the difference to the bee. In one case it steps from a frame on to the edge of an opening in the excluder, which is easy. In the other case it has to crawl along the under side of the excluder and perform a gymnastic stunt of worming itself through the opening, which is very difficult. Is it any wonder in the latter case that the board should be a "honey-excluder"?

Probably the easiest excluder for the bees to pass through is the unbound zinc with perforations crosswise, set down on the frames. I prefer a bound excluder, however, because I can see that it's there without opening the hive, and can give the bees an opening direct from the outside if I wish.

Ft. McKa, ett, Texas.

F. L. WIGNALL.

An Empty Super Below the Brood-nest to Prevent Swarming.

The discussion on the subject of deep bottom-boards only puts me to doubting again on a difficulty I thought I had solved. In the *Oklahoma Farm Journal* of July 15, 1908, Mr. Wright, of our experiment station, recommended, as a means of preventing swarming, placing an empty super below the brood-nest. It struck me that this was about the simplest and easiest way I had heard of; so, in writing to him later I asked him if there would be danger of the bees building comb in this space. His reply is as follows:

"As to the empty super below the brood-nest I must say that there is but little danger of comb being built in it if the bees have super room above. I have had them working in two supers above the brood-nest, but not a comb built in the empty super below.

W. R. WRIGHT."

This seems to me to be in direct conflict with Dr. Miller. However, your statement, that 'this question must be largely one of locality,' may explain matters. If so, then I might still try the easy plan.

What do you think of it?

Nashville, Okla.

G. E. LEMON.

[We do not understand that this is in direct conflict with Dr. Miller. In any event we ask Dr. Miller, in a Straw, to explain.—ED.]

Our Homes

By A. I. Root

And they were astonished at his doctrine; for he taught them as one that had authority, and not as the scribes.—MARK 1:22.

And say unto him, By what authority doest thou these things? and who gave thee this authority to do these things?—MARK 11:28.

But the men marvelled, saying, What manner of man is this, that even the winds and the sea obey him!—MATT. 8:27.

From our texts as given above you will notice that the Master was constantly challenged as to his authority. Hitherto all the great and learned doctors and teachers had been able to give only their opinion about certain things; and to-day, away along in the twentieth century, it is much as it was in olden times. There is a constant and unending discussion as to who is right and who is wrong. Sooner or later we are all made aware that the best of us are only human. Humanity is infirm, weak, and imperfect. We are making progress, it is true—wonderful progress—but every little while we are obliged to take a step backward. Somebody has made a mistake. In olden times the great doctors bled sick people to make them better; and, oh dear me! I need not say *olden* times, either; for many now living remember the time when the good doctor thought he had to take away a lot of blood, even if the thing the poor patient needed most was *more* blood and better blood; and it has even been suggested that the father of our nation might have lived longer had not the wise doctors in his time decided that taking away some of *his* precious blood was the thing to do. Well, if the doctors were the only people who made mistakes in olden times we should have been comparatively well off, and just *now*, "when doctors disagree, *who* shall decide?"

Whenever any thing new comes up, people at once ask for authority. When I said on these pages that the Wright brothers had a machine that would fly without any balloon, the statement was challenged on every side. People asked, as they had a right to, "Where do the Wrights live, and who are they?" When I published the account of their work and said I had seen them with my own eyes make a trip (of about a mile) through the air and come back to the starting-point, many people began to inquire who A. I. Root was; and quite a few decided my story was just a made-up piece of fiction.

Dear friends, the above is a little preface to a talk I want to give you this morning in regard to authority. In order to introduce the subject, let me make another extract from the *Cosmopolitan* for May, from that article by Upton Sinclair. The last sentence I have put in italics.

Perfect health! Have you any conception of what the phrase means? Can you form any image of what would be your feeling if every organ in your

body were functioning perfectly? Perhaps you can go back to some day in your youth, when you got up early in the morning and went for a walk, and the spirit of the sunrise got into your blood, and you walked faster and took deep breaths, and laughed aloud for the sheer happiness of being alive in such a world of beauty. Now you are grown older—and what would you give for the secret of that glorious feeling? What would you say if you were told that you could bring it back and keep it, not only for mornings, but for afternoons and evenings, and not as something accidental and mysterious, but as something which you yourself had created, and of which you were completely master?

This is not an introduction to a new device in patent-medicine advertising. I have nothing to sell, and no process patented. It is simply that for ten years I have been studying the ill health of myself and of the men and women around me. And I have found the cause and the remedy. I have found not only good health, but perfect health; I have found a new state of being, a new potentiality of life; a sense of lightness and cleanness and joyfulness, such as I did not know could exist in the human body.

I look about me in the world, and nearly everybody I know is sick. I could name, one after another, a hundred men and women who are doing vital work for progress and carrying a cruel handicap of physical suffering. In one single week's newspapers last spring I read that one was dying of kidney trouble, that another was in a hospital from nervous breakdown, and that a third was ill with ptomaine poisoning. And in my correspondence I am told that another of my dearest friends has only a year to live; that another heroic man is a nervous wreck, craving for death; and a third is tortured by bilious headaches. *And there is not one of these people whom I could not cure if I had him alone for a couple of weeks; no one of them who would not in the end be walking down the street "as if it was such fun!"*

Sinclair enumerates a list of his sick and ailing friends; and I agree some of those friends were badly off and no mistake, as he describes it; and yet he declares positively he could not only *cure* every one of them, but he could do it in just a couple of weeks. *Is he right about it?* Can it possibly be true that his scheme of fasting would work such miracles? And this forces the question upon us, "Who is Sinclair? Has he been a sound and sensible man hitherto?" I have a pile of books lying in my lap. One of them was written by Sinclair only about a year ago. The title is, "Good Health, and How we Won it." At that time he had not quite caught on to the fasting cure; but you will notice he was drifting toward it.

One of the other books is, "Perfect Health; how to Get it and how to Keep it. By One who Has it." I made a notice of this book in one of our recent issues. It gives an account of the wonderful things that have been done by fasting. Perhaps a hundred witnesses give their testimony.

Another book is, "A New Era for Woman: Health Without Drugs." This was written in 1896. Like the other it is largely devoted to simple diet and fasting.

The fourth and largest book of all is "The True Science of Living. The New Gospel of Health." It was written by Edward H. Dewey, and published in 1895. Dr. Dewey was instrumental, perhaps more than anybody else, in introducing fasting. The book made quite a sensation twelve or fifteen years ago. In fact, a good deal was said about it in this journal; and I have wondered considerably that it seemed to drop out of sight until Upton Sinclair and perhaps some others recently revived interest in Dewey.

The daily papers tell us that many people are now trying the fast cure all over our land. They have demonstrated this, if nothing further, that many people can live and even go on with their work for a week or more without food. Is this done under the influence of a sort of mania, or is it true that almost any one of us can get along a week without eating, and not be very uncomfortable?

There is just now also quite a discussion going on in regard to a vegetarian or mixed diet. The Battle Creek folks (and T. B. Terry is pretty nearly with them, if not quite) are recommending a vegetarian diet for everybody. At one time in my life I was a vegetarian for four years. I had, however, plenty of eggs and milk, or at least I had milk regularly and eggs occasionally. Years afterward, while being treated by Dr. Salisbury, I lived for *eighteen weeks* on lean meat alone—not a particle of vegetable food of any sort. That was not the starvation cure; but in reading Upton Sinclair and other authors I am impressed that it was much like it in many respects. Now I ought to be prepared to give at least some reasonable testimony in regard to the matter. The best wisdom I can scrape up on the subject is this: Some people can get along very well, and *perhaps* much better, on a strictly vegetable diet. They would have this one advantage: Where people have both kinds of food on the table at the same time, they are very apt to eat too much; and I am satisfied that a mixture at the same meal is not, as a rule, to be recommended.

Again, there are people, perhaps afflicted people, who can live and enjoy fairly good health on a strictly animal diet—say mostly lean meat. Just a little over a year ago, when recovering from grip fever, both Mrs. Root and myself were almost obliged to depend on beef juice, and, later on, broiled minced lean meat.* So much has been said about the Salisbury treatment in our pages in years past, that I hardly need explain it. Just a few days ago I wrote to Dr. J. M. Lewis, of Cleveland, O., probably the greatest living exponent of the Salisbury system at present, calling his attention to the article by Sinclair. In his letter of reply he makes this statement:

This overeating, in the majority of instances, is the underlying cause of most diseases.

At the close of his letter comes another sentence which I wish to quote:

I notice this, however, that thoughtful people, after experimenting on this, that, and the other, are usually very glad to fall back on to the animal-food diet, sometimes after they have got the system in a none too good condition.

Well, to the best of my knowledge and belief, dear friends, the last sentence is about

* Before deciding on beef juice I tested almost everything I knew or had ever heard of in the way of food for invalids, in the veg table line. My poor tortured and diseased digestive apparatus would have none of them. But when the doctor finally said that not a thing must go into my stomach but beef juice, and they procured some made just right, it seemed like manna from heaven; and I am not sure but it saved my life in the crisis. Mrs. Root's testimony was just about like my own.

right. Perhaps I might add that Dr. Lewis is not as yet, at least, much in favor of the fasting cure. If people ate moderately of good wholesome food there would likely be little need of such heroic measures; and, of course, prevention is better than cure. But after people have by high living contracted one or more of the fearful maladies that now afflict our people, what should be done? I am fully satisfied that going without one of the three meals is something in the right direction; and in extreme cases I feel pretty sure a fast of three or four days might be of great benefit.

Just think of it! There are people all around us—may be you, my friend, are one of them—who, when they happen to be in a large city, think they must pay 50 or even 75 cents for a dinner, supper, or breakfast; and on the table at home there is a like *preposterous* variety of rich foods. No wonder the complaint comes that provisions are so high people can not live and—be honest. Very often a portion of this rich food goes to the pigs or chickens. Kellerstrass says that the thirty pullets that laid the eggs that sold at \$2.00 apiece were fed almost entirely from the refuse from his tables. Now, you know what it costs you for your daily bread. In our last issue I told you that I could make a good meal, feel satisfied, and do heavy work, where the material for that simple meal cost less than one cent. Fletcher has given us a lot of illustrations along this same line. His daily food, when he performed those prodigious feats of strength and endurance, cost only a few cents a meal.

In the July issue of the *Cosmopolitan* a writer takes exception to the fast cure; and he says Dewey, with all his talk and teachings, died at the age of 68; and he intimates that Dewey might have lived longer had he not starved his poor body so many times, and so on. And this brings us to another point: These great and good men (for so I regard them), who were exponents of better and more rational ways of living, ought to live to a good old age. Terry is now a picture of health, a living illustration of his theory. I came pretty near saying *theology*, and God knows we need some theology along this line. Well, now, if Terry keeps right on being well and strong, his "authority" as a teacher will be continually gaining weight. Cornaro lived to be over 100; and his daily life clear up to the last was a standing monument to the truthfulness of his exhortations toward plain and simple food.

When Jesus came from his home in heaven down to earth to live a human life he was authority. No wonder people gazed at him and wondered. Is it possible that the kind and loving Father will see fit to send again some one who can speak with like authority, and sift out error from truth? May God hasten the time. Let us hold fast to our faith, and bear constantly in mind that, for some good reason, we are permitted thus to stumble in uncertainty and darkness. God has given reason and common sense if we will but use them. He has given

us abundant exhortation in his holy word in regard to the importance of holding in check these low appetites, and letting reason instead of inclination rule.

And now to our texts once more. The Jews were constantly questioning the authority of Jesus, and demanding to know where he got that authority and power. Never before since the world was created had any man been able to say to the winds and waves, "Peace, be still;" and with all that has been accomplished in the way of science and art it is hardly probable that any man in human form, unless it is the Master himself, shall in the future be able to command obedience of the boisterous elements of nature. Upton Sinclair has declared that every one of his friends with their serious maladies could be cured in *two weeks* if they would put themselves under his instruction. I hope he is right about it, but it is a question. The Lamb of God that taketh away the sin of the world never made a failure, and he never lost a patient. He said, and says now to the great wide world of humanity, "Come unto me, all ye that labor and are heavy laden, and I will give you rest." Just think and consider a moment. What would we think of a human being should he utter such words as these? Jesus continually gave *proof* of his authority. The miracles that followed at every step attested continually that he was the only one of whom God might say, "This is my beloved Son in whom I am well pleased." Not only did the winds and waves obey him, but when five thousand people were without food, by a single word the five loaves and two fishes fed the multitude, and twelve basketfuls of the fragments were left. Not only did the elements of nature respond in quick obedience to his simple words, but when Lazarus was dead and had been buried four days in the grave, at his quiet command, "Lazarus, come forth," the dead man promptly came to life and stepped forth among his friends. At the recent conference to which I have before alluded, a talented minister of the gospel gave us quite a discourse in regard to the miracles. If I interpreted him correctly he was endeavoring to reconcile those wondrous miracles of Christ with modern science and investigation; and he even suggested that, with a better knowledge of the "underlying laws of nature," we might even now perform, or approach to a certain extent, some of these miracles. The whole subject was painful to me; and in the discussion that arose at the close of the paper the author of it was rather severely handled by some of the older doctors of divinity. I wanted to say (but there did not seem to be time nor opportunity) that Jesus himself constantly discerned that his power to perform those wonders came direct from the Father above; for he said plainly, "Of myself I do nothing." In the case of raising Lazarus, just before he called him back to life he uttered this wonderful prayer to his heavenly Father: "Father, I thank thee that thou hast

heard me. And I knew that thou hearest me always; but because of the people which stand by I said it, that they may believe that thou hast sent me."

Now, in the above prayer he states very positively and plainly that the power which he used came directly from God. In fact, it was *God's miracles*, performed in response to the request from that well-beloved and only begotten Son. Jesus explained and declared to all the multitudes that his power was a *miraculous* one. This world of ours is full of tricks and deceptions, not only in business, but our doctors who are healing the sick (or trying to do so) sometimes use tricks and deception; yes, and I say it sadly, not all of those who stand in our pulpits as God's servants are *entirely* free from the practice of little deceptions. Now do not understand, please, that your old friend who speaks to you on these pages claims that *he* is entirely honest, and that all the rest of mankind are bad. That simple little sentence uttered by the *Sunday School Times*, that "deception is always wrong," hits me every little while. God knows I am *trying* to be honest and sincere from daylight to dark, and every day in the week; but with shame I confess that a good many times I can look back and see that I have made bungling work of it.

Now, then, friends, let us take a look at that wondrous man who was part human and part divine. Get your Testaments and read them over again, and see if you can find where he *ever* deceived or misled. He never made a mistake, for his heavenly Father constantly watched over him and protected him from making mistakes; and that same heavenly Father, through his only Son, will watch over us and protect us in like manner, if we go to him and study his holy word.

High-pressure Gardening

By A. I. ROOT

MY CORN STORY.

Now you must be patient with me while I tell my story; for there is not only one but more than one important moral to be gathered out of it. On p. 452, June 1, I told you about testing four bushels of ears of seed corn. Well, *some* of you, at least, know we had "catching weather" at corn-planting time. Finally we got the ground in pretty good trim, and it was all ready to be marked out and planted. As we have only about half a dozen acres in corn we do our planting with hand planters; and if a man has good seed, and understands using the hand planter—that is, if he has learned to keep watch and to be sure the planter *plants* every time he sets it in a hill, he will be pretty sure to have a good stand. When the ground and every thing was *just right*, several of my friends protested, because I thought I had not time to attend our year-

ly conference. But I finally decided that I had better take in the last day, even if I did not do any better. I have told you about it elsewhere. Well, after I got out of sight the team that was marking out the ground was needed for drawing basswood lumber from the hill to keep our machinery going, because we were running nights just then. Our farmwork is understood to be secondary to the factory business, especially when we are running night and day. Well, my good friend Leonard did not succeed in getting the use of his team to mark out the ground until along in the afternoon; and then he urged having two good men follow right after him and plant corn *at once*. But our teamster has so many calls in different directions, especially in the rushing season, that he can not always have his own way. The foreman of the lumber-yard said there would be demurrage on some of the cars of lumber unless they were unloaded at once. Then somebody suggested that if I were at home I certainly would not object to letting the corn go until morning.

Let me say here, that, before I went away, I noticed the barometer indicated rain, and so I left orders to rush the corn-planting. Leonard finally succeeded in getting two men to plant about an acre before the whistle blew for quitting.

We went over to the conference, about thirty miles away, with our automobiles; and in order to take in the closing address of the evening the boys proposed to stay all night and go home early in the morning. But remembering what the barometer said, I urged pretty vehemently that we would better make the trip home by moonlight, even if it did make us a little late. Before morning our people were very glad the two automobiles, pretty well loaded, did make the trip in the night, for it was raining before daylight, and it kept raining, off and on, for *almost two weeks*. In fact, it kept the ground so wet that the first acre was up and growing beautifully before we could possibly plant the rest of the field; and when we did plant the rest of it, it rained again; and it was cold, as you may remember, almost up to the middle of June. At least one-fourth of the second planting rotted, and in low wet places every hill would be missing for quite a piece. But that first acre we planted before the rain had got going, and it grew finely in spite of the cold and rain. Something else *also* grew finely. It was the weeds all through that second planting; and when the folks proposed planting a third time right in among the weeds that were already an inch high or more, I protested. It would have been *less work* to cultivate the second planting all up and fit the ground all over again, and it might have been the wisest thing to do; but as three-fourths of the field was up and growing fairly well I decided to send two men with nice sharp hoes to give that part of the field a good hoeing. Wherever there was only one stalk left in a hill we planted some more corn by hand. Where a hill

was missing entirely we cut up the weeds thoroughly and *then* planted with a hoe. With a boy to drop, two men with a hoe made fairly good speed. There was one advantage in planting with hoes. We could have the four or five grains of corn spread about more, and our experiment stations have decided that it is quite an advantage to have the four stalks four or five inches apart instead of having them all in a bunch as the hand planter often puts them. As it is, the prospect is now, June 21, that we shall have a very fair stand of corn; but it came by three different plantings during a period of two or three weeks.

Now, the moral to my story is that the *successful* farmer *must* be up and wide-awake, and on the alert.* I think it is better to work over-hours when the ground is ready and the barometer indicates a storm. But you know, of course, there is quite a feeling, in some places to the effect that "farm hands" should not be asked to work more than ten hours a day like other folks. Circumstances often alter cases, and alter them tremendously. I would willingly give a good man, who is willing to work over-hours occasionally better pay than one who thinks he has got to stop, no matter where you are, when quitting-time comes. Now, I am not much of a farmer just now; but I think I have learned *some* things from experience. Some of the older and successful corn-growers may laugh at my experience. But I think it will *help* some of them. Just one word more:

When my corn had to be planted the third time, all our nicely selected and kept seed corn was gone. The men started for the crib to get some more. I said, "Not so till I have tested it in the greenhouse;" and as it was Saturday night, by Monday morning I was ready to announce that the corn in the crib was fit to plant. By preserving an incubator temperature and the right amount of moisture you *can* test seed corn in 48 to 72 hours.

My second moral, and one that I have been thinking over and praying over, is along in the spiritual line. Is it the duty of a busy farmer to leave his work at corn-planting time to attend a State or county conference of his church? I think we may honestly make a mistake in both directions. My good friend Leonard said I lost thirty or forty dollars by not being on hand and pushing things as I have been in the habit of pushing all my life when I wanted to

* Just as soon as a piece of ground is properly fitted for seed or plants, the seed or plants should go in without waiting a single minute if possible. I have had some sad experience in years past, where something prevented putting in the seed the very minute, you might almost say, the ground was ready. In growing weather, weeds start very quickly; and when they once get a little ahead of the crop it is a difficult and expensive matter to get rid of them. One great reason why horse weedeers are not used more is that the weeds are permitted to get a little the start of the crop; and this very thing is why transplanting has many advantages. If the weeds can be allowed to make a start, and *then* work the ground thoroughly before putting in the seed, of course that helps a great deal.

make a success with my work. Well, if I had stayed away from conference I should have failed to hear that missionary tell about how China had put her foot down on the cigarette trade and the opium traffic. Some of you may say that my talk along in that line was, perhaps, of more benefit to the coming generation than hundreds of acres of thrifty corn-fields. God only knows. But he knows I *tried* to do my duty.

Now, I hope my good friends of the clergy will excuse me if I criticize *conferences* a little. Although I have been greatly blessed and profited in attending many conferences, I have also felt that much valuable time was wasted, or I do not know but I should say *worse* than wasted, in discussing unimportant doctrinal points. I have already alluded to a paper read at that same conference in regard to the miracles of Christ. In this day and age of the world, with electricity doing such wonders, and flying-machines gliding over our heads, it vexes me exceedingly to see educated men waste their precious time in matters pertaining to bygone ages. Here is what our good friend Terry has recently said in *The Practical Farmer*. Read it over, and see if you can not join with me in a hearty amen to the sentiment.

Carl S. English, Camas, Wash., says: "What the world greatly needs to-day is ministers who will teach from the pulpit just such truths in regard to right living as are found in *The Practical Farmer* from week to week." How many times I have felt this way! One goes to church, and often hears a long sermon about things that happened thousands of years ago. Then he goes home and thinks no more about it. It was of little practical use for every-day life. Oh that ministers would study correct living for this world, and teach it—air, water, sleep, food, sunshine, exercise, etc.! They could make us better men and women in every way. The best Christians are in healthy bodies.

SOUTHWEST FLORIDA IN THE SUMMER TIME.

So many questions are coming in, not only in regard to Florida for a winter home, but in regard to it the year round, I have thought best to give you clippings from letters from some of my Florida neighbors:

I was pleased to hear from you again and to learn that you contemplated coming to Florida so soon. I think that August will be the best month for you to come, as you will at that time find some of the summer fruits that you have not yet seen.

My potatoes turned out very well, about 200 bushels to the acre, as I estimate them. My best potatoes were where the vines were the largest. We are having lots of green corn now; also watermelons, muskmelons, tomatoes, and peaches. Your brother and wife seem contented and happy.

Bradenton, Fla., June 4.

E. B. ROOD.

POULTRY AND BEES IN LEE CO., FLA.

This looks like a great bee country. The orange and grape-fruit bloom are followed by pennyroyal, then comes the saw palmetto, and that will be followed soon by the cabbage palmetto. All of these are rich in nectar. No one near here has movable-frame hives; but the old box hive is in evidence, and its occupants have stored a rich harvest. The woods seem to be full of wild bees. A colony of hybrids occupies a hollow cypress about 200 yards from where this is written. They are waiting to be put on to Langstroth frames as soon as a hive can be obtained.

Chickens flourish here. Their great enemy is the "jigger flea." Moisture is sure death to that pest. On that account hen-houses are here built without roofs so that the rains may drown the fleas. A framework to carry roosts and nest-boxes, and covered with poultry-netting to keep out the varmints is the wisest construction. A Virginia creeper or a grapevine trained over it for shade, and you have the ideal house. Food is abundant. Green stuff grows the year round; houses are cheap; chickens are healthy; eggs are plentiful in the winter, and prices are good. What more can one ask? We are camped at present, waiting until we can move into the houses we are building on our homesteads. We bought an old hen and 27 chicks, newly hatched, for \$1.88, about April 15. Something unknown got one chick; 26 chicks weaned and feathered, not one of which has shown a symptom of disease—sturdy, healthy, and growing like weeds tells the tale of one brood in this poultryman's paradise.

The writer's experience with bees and chickens has been gathered in Southwest Missouri, in the Bluegrass and in the hill country of Kentucky, and in that rich farming section, Central Indiana. They are all bee and chicken sections, but none of them are to be thought of in comparison with this favored region.

For many years the writer led a very busy life. He had only a little time for his pets. Now in his old age he is planning to take it easy on one of Uncle Sam's free farms in this genial clime, and play with the bees and the chickens. He is thankful that a beneficent government has a homestead to give him where he can grow his "winter garden" in comfort and spend his declining years cared for by his insect and feathered friends. He will have no land to sell for many days, and pens these lines only in the hope that some one else among your readers who needs the advantages of this land of promise may have his attention called to it.

Denaud, Fla., June 6.

FRANK M. BALDWIN.

Perhaps I should suggest that the writer of the above has been in Florida only since last October. After he has had a longer experience perhaps he will not be so enthusiastic; and yet I agree with him that many parts of Florida do offer some unusual advantages for bees and poultry.

THE TRUTH ABOUT THE POULTRY BUSINESS NEAR GREEN COVE SPRINGS, FLA.

On page 366, June 1, I clipped from an advertisement in the *Up-to-date Farmer* the following:

Five years ago a Northern settler, with very little money, located near Green Cove Springs, Fla., and started in the poultry business. To-day he has about 3000 chickens, and receives \$13,500 annually for eggs alone.

Now, for the real facts in the matter see the letter below; and, by the way, my impression is that the greater part of the extravagant stories told by land agents will be found, when chased down to the real source, to be just about like what friend Hall tells us.

I noticed in June 1st GLEANINGS something about a poultry-farm near Green Cove Springs, that has about 3000 hens. I wish to tell you there is no such farm in Clay County, because I took the census in precincts 1 and 2, including Green Cove Springs town, and I am personally acquainted with almost every family in the county. We (myself and wife) keep between 200 and 300 hens, and raise from 200 to 500 chickens per year, and I think we sell as many eggs as any one family in the county. I know we made by far the best report on poultry and eggs of any one in precincts 1 and 2. We use an incubator, and set hens at the same time, and give the chicks all to hens, and have never used a brooder. We are much interested in your poultry writings, as they agree with a good deal of our 27 years' work with poultry.

We now have 21 very fine colonies of bees; have made more honey this year than ever before, and are learning something new almost every day about

bees. We have had them only three years. The first swarm came to us. We enjoy caring for them, and they truly reward us for our work.

Green Cove Springs, Fla., June 6. J. E. HALL.

THE TRUTH ABOUT THE ST. CLOUD SETTLEMENT FOR THE OLD SOLDIERS IN FLORIDA.

We clip the following from the *Rural New-Yorker*:

In my judgment the St. Cloud, Florida, proposition is one of the greatest outrages that has been imposed upon the old soldier. I had heard a great deal about it, and made a special trip to St. Cloud to see it. Language could not express my disgust and contempt for the parties who were working the scheme. Neither could words express the pity and sympathy for the old boys who were being worked. I really think it is a proposition that the United States government should investigate.

Columbus, O.

THOS. E. KNAUSS.

I heartily agree with the *Rural*, that working *any* class of people is bad enough; but when it comes to working their schemes on the few old soldiers now left among us, it is time that the general government should make an investigation.

IS ANY PART OF FLORIDA "FROST-PROOF"?

Dear Mr. Root:—Will you kindly tell me if there is any land in Florida where there is no danger of frost? Was there any at Bradentown where you were that did any damage? And do you consider it still more safe south of Bradentown toward Fort Myers? There are so many conflicting reports that I should greatly appreciate your judgment in the matter. Good parties tell me that Manatee and De Soto counties are practically below the frost-line.

Hudson, O., June 16.

T. B. TERRY.

Manatee County and many parts of De Soto are practically frost-proof. Last winter a lot of stuff was killed on our grounds about Christmas time, but all or nearly all has started up from the ground, and this frost, as I have explained in GLEANINGS, was the most severe for perhaps the past fifteen years.

Now, there is still another point to be considered. There are many places in our neighborhood where frost did more damage than on my place, and, at the same time, there are other localities close to the bay where there was practically no injury. Oranges were very little damaged in most localities. So far I know, there is no spot in Florida, that is, no region of any considerable extent, where there is never *any* damage from frost. Even down at Miami, tomatoes have a few times in the past ten years been damaged quite a little. Fort Myers is further south than Bradentown, and would naturally be a little more secure from injury; but there are places around Ft. Myers, say where there is not sufficient air drainage, or a depression in the landscape, for instance, where the cold air settles a good deal as water settles in a valley after a big rain. In these cold valleys frost often does quite a little damage, while on ground that has good air drainage there will be no damage at all.

Still another thing must be considered. The islands out in the water are often entirely free from any injury by frost when the main land suffers more or less. There has never been a freeze, for instance, on the

island where I spent two winters, to injure vegetation; but there have been times when there was a cold north wind that blighted the stuff (cucumbers, for instance) almost but not quite so badly as the frost; so you see there are many things to be considered in asking for a locality or region entirely free from frost.

THE EUCALYPTUS IN FLORIDA; MORE ABOUT IT.

When we came here 21 months ago there was growing in our front yard a young switch of eucalyptus. It has been growing without care, and is now a nice tree about 15 ft. in height. Its stem measures 12½ inches in circumference half a foot above ground. I send you clippings which show that these trees may be grown on a large scale in Lee County, in the near future. There is now a eucalyptus nursery owned by the K. U. Nurseries, Estero, Fla. I also take pleasure in sending you address of *Florida Everglades Review*, Chicago, Ill. That paper speaks of success with alfalfa and alsike clover in South Florida. It seems to me that where alfalfa and clover succeed, sweet clover also ought to grow.

Estero, Fla., June 13. MRS. THERESE YOUNGER.

I am very glad to know that there is a prospect of some varieties of eucalyptus succeeding in Florida. Mr. Reasoner, of the Oneco nurseries, informed me last winter that the eucalyptus usually grown in California did not seem to succeed well in Florida; but he said there were some new varieties that gave promise of success. In regard to alfalfa, alsike, and other clovers in South Florida, I know they do sometimes succeed for a while; but my impression is that the hot wet summers generally use them up. The Crenshaw Seed Co., of Tampa, Fla., although they advertise alfalfa seed, wrote me recently that, if there was any place in Florida where alfalfa was a success, they would be glad to know it. And, by the way, I would suggest that a periodical printed in *Chicago* does not usually give very correct information as to what may be grown in *Florida*.

EUCALYPTUS AS A REMEDY FOR VERMIN ON CHICKENS.

On page 364, June 1, is a letter from Jas. A. Nelson, Escondido, Cal., headed "Vermin on Chickens Prevented by Eucalyptus-trees." I wish to state I gave that remedy a thorough trial ten years ago. There is nothing in it. I had chickens house-surrounded by eucalyptus-trees; made roosts of eucalyptus poles, and kept branches of trees in the houses; but not a louse went away.

Metz, Cal., June 13.

H. E. THAYER.

The above is not a surprise to me; and, in fact, many of the remedies proposed for chickens and people are, I have reason to believe, based on misconception or misunderstanding. The remedy is used, and the chicken or person gets better and recovers, when the recovery was really due to some outside influence. Well, if the eucalyptus is not a remedy for poultry vermin, discussing the tree has brought out good in another way. I have several reports to the effect that eucalyptus does succeed in Florida, even in our own town of Bradentown. See the following:

EUCALYPTUS IN SOUTHWESTERN FLORIDA.

Friend Root:—I notice what you say, June 1, page 364, about there being no eucalyptus-trees in Florida. When I was in Bradentown in 1908 friend True-

blood pointed out a eucalyptus-tree to me. It was quite tall, and friend T. said it had made a remarkable growth in a few years. I don't know the species. I am not familiar enough with the town to know now what street it was on. I have just finished reading Terry's book on health, I have been studying this question for several years, and in the main I think Terry is correct, although there are some things I am sure he is mistaken about. One thing is in not getting any strength from our food. We certainly get a large part of it from the food we assimilate.

Martinsville, O., June 20. E. C. GARNER, M. D.

It is now up to our good friend Trueblood to stand up and explain.

Poultry Department

By A. I. ROOT

"STICK-TIGHT FLEAS;" MORE ABOUT THEM, ETC.

We have had and are still having an awful fight with those chicken fleas. I think I can tell the whole tribe of poultry-journals something about chicken fleas. I find their main lodging-place is under the bills of small chicks. You will find them there when there is no sign anywhere else; and after they have got a start and sapped the life out of the chick, what will kill the fleas will be fatal to the chick. They bore in so I have to take my watch-tweezers to pull them out, and even then they come hard. I have lost a good many chickens from fleas. I made a whole washtubful of solution yesterday, and used the sprinkler and sprinkled all the floors and sides and roosts of the building. I found the old nests down deep full of chicken lice also. The way Wesley sprayed did not kill them. It simply kept them off the surface. I am now going to get a bag of lime and slack it, and spread it over all the different houses on the ground, and keep the houses clean. I think the dose I gave them yesterday will settle them. I went over to Mr. Abbott's the other night, and he said he had engaged a barrel of crude oil at \$4.50 that they sprinkle the streets with. With this he expects to keep his place free from vermin. I think if the houses were wet down with that for a while it would make a hard and smooth surface in all the houses so that no vermin of any kind could live in them.

I get only about two dozen eggs a day now. Several hens are wanting to sit. I have four hens sitting now on Buttercups. The Buttercups lay very well. One hen is clucking, but has not offered to sit as yet. If nothing happens I shall have a flock for you next fall. My wife says, just as Sue does, that those chickens keep one closer than any business. I do not want to leave them at all, for if I do something is sure to go wrong.

The auto behaves splendidly. I think a great deal of it. Once in a while it troubles a little to start, but it is my fault in not watching when it troubles. The roads have been fearful between here and town; but the rain has helped somewhat. I like it better and better here. The summer so far beats Arizona. I wear just my kakai pants and a blue shirt, and go barefoot among the chickens—no flies nor mosquitoes as yet to bother. I have got my net for fishing, but do not have time to use it. I must clean out the creek, as it is full of snags and stones.

Your front yard is pretty well dried up, and Mr. Rood's is more so than ours; but I think the last rain will help it. Most of the trees are doing fairly well. Those that blossomed so full fell off most. I am putting palmetto roots around those in the back yard, and protecting them from the chickens. They scratch the dirt away if I do not.

Bradentown, Fla., June 14.

J. H. ROOT.

THE SEXAPHONE—THE INSTRUMENT THAT TELLS WHETHER AN EGG WILL PRODUCE A PULLET OR A ROOSTER.

Mr. A. I. Root:—I take great interest in your poultry notes, and have been expecting you to have heard of the sexaphone long ago, making sure that some one would have drawn your atten-

tion to it. Now that I am writing to the firm I will enclose report of it from the *Review of Reviews* for May, last year, which will explain. It has been on sale here for the last six months. A great many believe in it, and some of my family do; but I can't bring myself to believe that the animal magnetism of each sex in an egg can be detected by such a simple instrument. I can't get it to work to my satisfaction. We had a setting of nine, and got six pullets. We sent the sexaphone to a party who believes in it, and who had a good strain of poultry. It seems to me that when the little steel ball begins to move, the person, unaware, through sympathy, gives it that movement, whichever movement it may take. Hang it on a nail instead of on the finger and you get no results; or blindfold, when trying it, you get no decided results.

Newboro, Oamaru, Mar. 10.

JOHN ALLEN.

With the above letter came a leaf torn from the English *Review of Reviews*; and this sheet contains a picture of the wonderful instrument. Just as soon as I read the above letter I decided the machine was on the same plan as the planchette board that made such a stir over forty years ago; and it is certainly a disgrace to the present state of civilization to see a periodical like the *Review of Reviews* not only giving space to a description of the thing, but also illustrating the "humbug toy." See page 240, April 1.

CARBOLINEUM AS A REMEDY FOR VERMIN IN POULTRY-HOUSES; ALSO SOMETHING MORE ABOUT STICK-TIGHT FLEAS.

Here is a remedy for ridding a poultry-plant of mites and lice, worth ten times all the other remedies recommended. Two of my neighbors' ranches as well as my own were overrun with vermin—so much so that one of them lost a good part of chickens and young poult. We had tried almost everything, only to be defeated. Last fall I got a gallon of carbolineum, and we divided it among the three of us. I used less than one quart in twelve colony houses.

I applied it to the bottom of the roosts with a four-inch brush. That was over six months ago, and I am not afraid to offer \$1.00 per mite or louse if found in any of my twelve colony houses. Here on the coast it costs \$1.75 per gallon.

If it would drive away fleas such as bother poultrymen in Florida it would be great, for I have raised poultry in St. Petersburg, Fla., and know what a bore vermin are to the poultry-raiser there. Langley, Wash., June 7.

S. S. STULTS.

My good friend, I think you are right about it, or at least pretty nearly so. If you will turn to page 1214 of our issue for Sept. 15, 1908, you will find that I made a poultry-house here in Ohio, and sprayed all the lumber, and every thing put into it, with carbolineum.* I said there that the *Rural New-Yorker* and the *Country Gentleman* both recommended this preservative, and I am glad to indorse what you say by telling you that I have never been able to find mites, lice, or fleas anywhere on the premises, nor on any of the chickens, big or little; and it is now two years since the carbolineum was put on the building. I was not able to get carbolineum in Florida, but I obtained of a neighbor some zenoleum, which he thought was much the same thing; but it did not banish the sticktight fleas. In fact, Dr. Conkey, of Cleveland, who manufactures every thing in the way of medicine for the whole poultry business, wrote me recently that he felt sure that neither his lice-killer nor any other would

* Address Carbolineum Wood-preserving Co., 349 West Broadway, New York.

drive off the stick-tight fleas. You have got to catch the chickens and put some sort of grease on the comb, on top of the head, and on the throat under the bill. My opinion is that any sort of grease or oil will do the business. Carbolated vaseline has been recommended, and one of our readers recently wrote me that just common "chicken oil" is the best thing in the world. We all know this would not hurt chickens, old or young; and when you are killing fat hens occasionally, chicken oil will probably be the cheapest thing in the world.

JAPANESE BUCKWHEAT—A PROTEST.

I got $\frac{1}{2}$ lb. of Japanese buckwheat of you when first out, and increased from it, but was disappointed. Old sorts will beat it over and over. It's all nonsense to plant late—the earlier the better so as to hit cool weather in the spring, like oats seeding, and thus avoid late frost. Old gray Indian wheat, so called, is one of the most productive, is a fine grower, etc. Jap. is apt to blight badly, or did with me on the Hallowell farm. Better leave it alone. Mechanic Falls, Maine. E. P. CHURCHILL.

Friend C., no doubt the old gray buckwheat is better for you away up in Maine than the Japanese; and it is true that there are quite a few localities where the old-fashioned gray or silverhull is better than the Japanese. But there are other places where the Japanese has given a much larger yield and plumper grains than the old sorts. We should be glad to get reports from others in regard to the different varieties of buckwheat, both for honey and for grain.

EARLY APPLES IN JUNE AND JULY.

Dear Sir:—If you want early apples, and California is not too far for you, you may write to Jacobs Brothers, Visalia, Cal. They have a few acres of Red Astrakhan which ripen here in early June. The quality is generally fine, and of large size. They are good people. OTTO LUHDORFF.

Visalia, Cal., June 8.

Many thanks, friend L.; but the last time I was in California Early Astrakhans were selling at a nickel apiece, and by the time we paid express charges on a small lot here to Ohio they would be rather expensive "medicine." And that reminds me that I found about the finest Red Astrakhans I ever saw in my life up in the Black Hills region of South Dakota; but they were *there* worth a nickel apiece.

PASSENGERS DINE ON A SKY-LINER.

The papers inform us that the monstrous dirigible balloon Deutschland now carries passengers on a hundred-mile trip for an even \$50.00, "meals included." As she made her first trip and got back again inside of three hours (ready for *another* trip) it looks as if it might be a *paying* investment. But notwithstanding the price, you have got to buy your ticket two weeks ahead to be sure to engage a passage, as this sky-liner carries only twenty passengers. Of course, this is not a real flying-machine. It is a big balloon with propellers. When they get to carrying passengers in an aeroplane without any gas or gas-bag about it,

then we may begin to "sit up and take notice," particularly as to what may be going on in the air over our heads.

Temperance

THE TEMPERANCE WAVE AND WHAT IT HAS ACCOMPLISHED.

We clip the following from the *Woman's National Daily* of June, 18:

Figures issued recently by government statisticians show that within the last two years the people of the United States have lessened their expenditure for alcoholic beverages by an amount estimated at \$110,185,600. When one stops to remember that this enormous decrease is shown despite the great inflow of foreigners, most of whom are habitual users of alcohol in some form, the figures are pregnant with hopeful possibilities.

Now, it probably is not worth while to inquire as to whom the credit belongs for saving the nation over 110 million dollars; but I think the great wide world will agree that the Anti-saloon League, with its persistent and aggressive pushing, has had much to do with it. Of course, there is still a big job ahead of us; and the liquor forces, with their millions, are working hard to undo what we have already accomplished. But God is on our side, and we shall surely triumph.

A "STRAW" THAT SHOWS WHICH WAY THE WIND IS BLOWING.

The following sentences come at the close of a business letter:

Mr. Root.—I understand that you are a *dry* man. I am that way myself. What we want next is State-wide prohibition. We are bothered by Parkersburg; but I think the *whole State* of West Virginia will be dry after next winter.

Marietta, O., June 18.

B. S. SPRAGUE.

"TWO KINGS DEAD, SUICIDES BY THEIR OWN HANDS."

Among the other good things in *Good Health* for July is an article with the above heading; and below are two brief extracts from that excellent journal. Here is the first one:

Edward, king of England, is dead, and Mark Twain, king of letters in America, is dead, and both have ended their earthly careers without good justification for thus abruptly abandoning their stewardships.

Edward died of smoker's throat, and Twain died of smoker's heart. In other words, both these distinguished persons smoked themselves to death.

And here is the other one.

Trust in this foolish doctrine of immunity led Mark Twain, the recognized king of American literature, to cultivate death most assiduously, smoking, according to report twenty strong cigars a day, and a pipe between times. His physician is reported to have said that smoking had nothing to do with his death; but he died of angina pectoris, a disease of the heart which is one of the best recognized consequences of chronic nicotine poisoning.

If you want proof of the two statements above, read the whole article. While I, with the rest of the world, admired Mark Twain it always gave me pain to see him pictured with a cigar in his mouth. No doubt the example he set before the world has been the means of starting hundreds and perhaps thousands of boys into the habit of using tobacco.

Gleanings in Bee Culture

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Editorial

WORD has just been received from General Manager N. E. France, that the next Convention of the National Bee-keepers' Association will be held in the Common Council Chamber of the City Hall, Albany, N. Y., October 12 and 13. We presume that full particulars will be forthcoming later, including the program, etc.

FIRE LOSS.

Mr. F. J. Strittmatter, of Ebensburg, Pa., was burned out of house and home, including his bee-supply house. The loss was between \$5000 and \$6000, about half covered with insurance. Included in the list was about 6000 pounds of honey and his honey-melting and bottling outfit. His stationery, ledger, correspondence, and desk were also burned. He desires us to make mention of this so that his customers may enable him to straighten out his records.

TWO BULLETINS ON BEES FROM THE GOVERNMENT.

THE United States Department of Agriculture has issued Farmers' Bulletin No. 397, entitled "Bees," by Dr. E. F. Phillips, in Charge of Bee Culture in the Bureau of Entomology. This bulletin contains nearly 50 pages of live helpful matter on the care and management of bees. It takes up the following subjects: Location of an Apiary; Equipment and Apparatus; Equipment in Bees; Bee Behavior; Directions for General Manipulations; Transferring; Uniting; Robbing; Feeding; Spring Management; Swarm Management; Preparations for Harvest; Honey Production; Production of Wax; Wintering; and last, but not least, Diseases of Bees. On this latter subject Dr. Phillips is probably our best authority now in the United States. He has traveled over all the country, and knows more about the location of disease than perhaps any other person.

This bulletin is for free distribution, and may be obtained by addressing a postal card to the Secretary of Agriculture, Washington, D. C. Ask for Farmers' Bulletin No. 397, entitled "Bees," by Dr. E. F. Phillips.

THE ANATOMY OF THE BEE is the subject of another bulletin, Technical Series No. 18, of the United States Department of Agri-

culture, Bureau of Entomology, by R. E. Snodgrass. This is probably the most comprehensive work, going into the general anatomical structure of the bee, that was ever published. Mr. Snodgrass, besides having the work of all the other scientists before him, has done a prodigious amount of original work in dissecting the honey-bee. While this bulletin may be too technical for the average bee-keeper, yet there is a large number among our ranks who enjoy going into the science of these things. It contains 160 pages, and it can be secured by sending 20 cts., addressing the Secretary of Agriculture, Washington, D. C.

THE PART THAT THE BEES PLAY IN FERTILIZING APPLE-BLOSSOMS.

ONE of our subscribers, Mr. J. A. Yeomans, of Spokane, Wash., recently made a trip to Wenatchee, Wash., talking bees to the orchard men of that district. An investigation was made at the request of one of the leading citizens of the town, who was largely interested in orchards, Mr. R. E. Trumble, Professor of Horticulture in the High School, having charge of the work. His conclusions as given in the newspapers are of great interest to bee-keepers. The report in abbreviated form follows.

The apple-blossom drop is due largely to three causes: First, many of the young terminal shoots set fruit this year. This is unusual; and where it happens, most of the blossoms normally fall from these young shoots.

Second, unfavorable wind conditions during the blossoming period reduced the wind pollination to a minimum.

Third, we have very inadequate bee pollination in this valley, because we have very few bees compared with the great number of trees to be cross-pollinated. When going through the orchards during the blossoming time I have found only two or three bees in a five-acre orchard. While there are over 68 different insects that cross-pollinate apples, these insects are not here in numbers great enough to cross-pollinate the great number of bearing trees we have. Another thing that made bee-pollination difficult this spring was the fact that all the varieties of apples bloomed so nearly at the same time. This was unusual, ordinarily there being considerable variation in the time of blooming among the varieties and even among the blossoms of the same kind of varieties.

Counts were made of three varieties of ap-

ple-trees near bee-hives (30 to 100 yards). For comparison, counts were also made on the same varieties of trees where no bee-hives were near, to determine the percentage of blossoms and fruit-spurs that failed to set fruit, and the number that set fruit with and without bees. Only spurs that bore blossoms this year were counted.

It was found that, where the bees were near, only 7 per cent of the fruit-spurs failed, on the average; while where there were no bees 49 per cent of the fruit spurs that normally set three or four apples failed. These did not set a single apple.

Mr. Trumble summarizes his investigation as follows: "Our conclusion is that, to prevent such difficulties in the future, we must get bees. The common honey-bees are the best insect pollinators on earth. They come out earlier in the spring, stay out later in the fall; begin earlier in the morning, and work later in the evening; and they will work under more unfavorable weather conditions than any other insect. From my work with bees I have calculated that a single honey-bee is capable of cross-pollinating over 16,000 apple-blossoms in a day; but during the blossoming period there are so many blossoms that the bees do not go far from the hives, so we need hives all over the orchards."

AUTOMATIC CAN-FILLERS.

OUR readers will recall a number of inventions that have been described and illustrated for the purpose of automatically shutting the honey-gate when a five-gallon can is full, thus making it unnecessary for one to stand and watch to prevent the honey from running over on the floor. Mr. Hutchinson has very successfully used an electric bell that would ring when the can was nearly full, so that he could come and snut off the stream at the proper time. The other inventions have provided means for automatically shutting the gate at the proper moment.

The great trouble with electrical devices in affairs of this kind is that points are likely to corrode so that poor contact is made and the warning is not given. The mechanical devices for shutting the gate, in our opinion, have been entirely too complicated to be practical for the average bee-keeper.

Mr. W. C. Evans, of Fort Collins, Colo., has invented an automatic filler which is ahead of any thing we have ever seen, and is so simple that there is practically nothing to it. The great wonder is that no one thought of it before. *The stream of honey is not shut off at all; but when one five-gallon can is full the honey is automatically directed to another can standing alongside. Faster work is done, and there is absolutely no danger of honey being spilled over on the floor; for after the first can is full, and the honey is filling the second can, this first can may be removed and a third one put in its place, so that, when the second can is full, the stream will be turned again into the third can. We hope to show illustra-*

tions and give a full description of the outfit in our next issue.

HONEY REPORTS.

In our last issue, page 402, we inserted the following set of questions, to which we desired our readers to respond by postal card:

1. Condition of bees?
2. Climatic conditions (favorable or not)?
3. Are bee-men suffering from drouth or wet weather?
4. Prospects for honey crop?
5. Compare prospects with last year, same date.
6. Percentage of full crop harvested to date?
7. Compare yield with last year, same date.
8. Kind of honey produced in your locality, comb or extracted?
9. Color of honey produced this year?
10. Price local dealers are paying for honey?
11. Price bee-men are holding for?
12. Is the crop moving readily?

It is a little early yet to get returns, and we have therefore received at this date only a comparatively few cards; but they will give us some idea of what is doing in several of the near-by States. The responses are by number, and, of course, correspond to the numbered questions above.

Bees are doing finely now, having a good flow of honey from white clover.

Ticonderoga, N. Y., July 11.

G. H. ADKINS.

The honey-flow seems to be unusually short in Florida this year.

Bradentown, Va., July 5.

E. B. ROOD.

The prospect for a crop of honey is not as good as last year. It is too dry.

Wolverine, Mich., July 9.

L. K. FEICK.

Perhaps you would like to know that the clover honey crop is good here in Southeast Pennsylvania.

Royersford, Pa., July 1.

W. E. PETERMAN.

1, poor to good; 2, too wet; 3, wet weather; 4, not very good; 5, 50 per cent; 6, nothing; 7, same; 8, extracted; 9, white.

Dry Fork, W. Va., July 8.

E. C. MERSING.

Report of crop up to July 8. Bees have scarcely whitened the combs in my vicinity. 1, fair; 2, no; 3, drouth; 4, very poor; 7, not a pound.

Mancelona, Mich., July 7.

S. D. CHAPMAN.

No rain in June to speak of, and none in sight yet here; dry as ashes, and forest fires around. Only one-third honey-crop if fall flow should not prove something unusual.

Wausau, Wis., July 7.

G. A. LUNDE.

1, good; 2, bad till June 27; 3, wet; 4, can't tell about the fall crop; 5, equally bad; 6, none at all; bad; 7, equally bad; 8, comb; 9, none produced; 10 and 11, don't know; 12, there is no crop to move.

Norwood, Pa., July 4.

REV. R. B. GREEN.

1, fair; 2, favorable; 3, neither since June 15; 4, fair; 5, better than last year at same date; 6, none; 7, better flow than same date last year; 8, both; most comb; 9, white flow now on; 10, none on market.

Reynoldsville, Pa., July 7.

REA BEE & HONEY CO.

I hived a swarm of bees on June 22, and by June 25 they had drawn comb in eight Hoffman frames, and filled them with honey. Can you beat that? I never saw any thing like it.

Bay City, Mich., June 26.

WM. E. DECOURCY.

1, Good; 2, favorable; 3, neither; 4, fairly good; 5, better; 6, 50 per cent or a little better; 7, much better; 8, mostly comb; 9, white, mixed with light amber; 10, 15 to 16; 11, most is sold direct; 12, yes.

Lititz, Pa., July 6.

SSAVERY BROS.

Thirty days of fine weather with heavy flow of nectar; 150 lbs. to colony already secured; same condition in Missouri, Kansas, and throughout this State.

Humboldt, Neb., July 4.

J. L. GANDY.

Bees are doing well.
Syracuse, N. Y., July 9.

THE A. I. ROOT CO.

1, good; 2, favorable; 3, a little dry; 4, no better in twenty years; white clover; 5, no good last year; 6, some 100 lbs. to colony; 8, about one-half comb; 9, white clover fine; 11, 10 cts. extracted, 15 cts. comb; 12, yes.

Shenandoah, Iowa, June 11.

O. H. HYATT.

1, fair; 2, too dry; 3, from drouth; 4, below average; 5, about the same; 6, 35 per cent; 7, 75 per cent; 8, mostly comb; 9, nearly white; 10, comb, 14 to 15; 8½ for extracted; 11, comb, 14 to 15; 8½ for extracted; 12, too early to tell.

Flat Rock, Mich., July 11.

D. I. WAGAR.

The prospects for a honey crop in this locality are certainly very discouraging. While a part of the State will have some kind of a crop, the chances are that this locality will have but a very small part.

THE COLORADO HONEY-PRODUCERS' ASS'N.

Denver, Col., July 6.

No. 1. Bees in good condition; 2, unfavorable; 3, drouth; 4, one-fourth crop; 5, about the same, barring honey-dew; 6, none; 75 lbs. from 170 colonies up to date; 7, about the same; 8, comb; 9, white; no honey-dew to date; 10, 12½ cts.; 11, not any thing to hold; 12, don't seem to. G. B. TACCABERRY.

Cantul, Iowa.

Central Vermont.—1, good; 2, all kinds, hot and wet; 3, thunder showers frequent; 4, good average; 5, all better; 6, fair crop on hives; 7, no surplus last year; 8, comb, some both; 9, good white; 10, none on market; 11, comb 16, extracted 12 cts.; 12, none moved yet. Bees nearly starved to June 15. Scale live up to 11 lbs. net, one day.

Barre, Vt., July 4.

H. WILLIAM SCOTT.

1, below the average; 2, very unfavorable; 3, extreme drouth; 4, poorest in years; 5, not as good; 6, of comb, about ½ per cent; 7, less than half crop; 8, both; 9, water-white; 10, no market established; 11, extracted fancy comb, 18 to 20; 12, none sold yet.

Basswood will bloom in a few days; but a part of the trees show no indications of blooming. It did not bloom here last year.

Chatfield, Minn., July 8.

JOHN J. KADLETZ.

The bees are doing excellent work since the warm weather has come. A good new swarm filled a common-sized hive for me in about five days when I put a super on, and they will have the sections full in a couple of days more. The white clover was a big crop until the hot dry weather came, which is drying it up fast. We have had but one good rain in the past few weeks, and that was the 26th of June. Quasqueton, Iowa, July 8.

A. D. STONEMAN.

My report for honey prospects so far: 1, condition of bees, poor; 2, climatic conditions, very bad till June 7; 3, getting drouthy; 4, rather poor; 5, not so good as last year; 6, more; 7, less than last year; 8, comb; 9, white; 10, 11, and 12, no information.

The bad weather of the last part of May and the first week of June, when the bees pulled out their drones, and in some cases worker brood, gave honey prospects a black eye.

Lapeer, Mich., July 5.

R. L. TAYLOR.

In the meantime we wish our readers everywhere to keep on sending in their responses to this same set of questions. Conditions are changing so rapidly now, that before we can determine what the honey market is or will be we shall have to know something of crop conditions. To that end we respectfully request that the actual facts be given as nearly as may be. A suppression of the fact that a honey crop has been secured will defeat its object later on by a slump in the market in that locality. Better by far let the facts be known just as they are.

TELEGRAPHIC REPORTS OF HONEY-CROP CONDITIONS.

We sent the following letter on Monday, the 11th, to various parties in the several States:

Dear Sir:—For the purpose of publication just as the last form of the journal goes to press I wish that you would wire us a night letter of 50 words giving prospects of a honey crop, based on the reports that have come into your office, and on your own observations from local reports in your vicinity. I wish you would also call up the local market and ascertain whether there is any honey on the market; if so, what prices are ruling? Prepare the night letter as soon as you get this letter, and send it to the Western Union office marked "night letter," when it will come on as soon as it can go.

E. R. ROOT, Ed. of GLEANINGS.

The following are the replies received just as we go to press:

Very poor crop. THE A. I. ROOT CO.

Washington, D. C., July 12.

General reports from one-third to one-half crop.

Platteville, Wis., July 12.

N. E. FRANCE.

I can not see more than half a crop. Drouth has cut clover and basswood short; no honey to ship.

Fremont, Mich., July 12.

GEO. E. HILTON.

Iowa honey crop is reported a little below the average. Pretty dry now.

Des Moines, July 13.

THE A. I. ROOT CO.

Fair to medium crop in this vicinity; prices probably higher.

New York, July 13.

THE A. I. ROOT CO.

Abundant clover, but cold rains prevented bees gathering. Twenty per cent average.

Philadelphia, July 13.

WM. A. SELSER.

The honey crop in Western Vermont will be very large—one of our best years. The crop in Eastern and Central Massachusetts will be light.

Middlebury, Vt., July 12.

J. E. CRANE.

The majority of our customers in Missouri, Arkansas, and Southern States report a very light crop—below that of last season. Bees are working fairly well now, and prospects are better for a fall crop. Honey is considered of good grade.

BLANKE & HAUK SUPPLY CO.

St. Louis, Mo., July 12.

We estimate about half a crop for Michigan. Some localities are especially favored; other sections are the worst in years. The quality of honey is good. A general rain in the next few days would continue the clover flow and change the above report for the better. No reports of honey-dew.

Lansing, Mich., July 12.

M. H. HUNT & SON.

The honey crop in Indiana is about the average in quantity and quality. The central and northern parts of the State have the best crop that has been taken for years; but the southern part of the State has not done so well. The season is extending far into July, and fall prospects are excellent. Very little new honey is on the market, and prices for the new crop are not yet established.

Indianapolis, Ind., July 12.

W. S. POWDER.

The supply business with me this season is almost a failure. Conditions are the worst I have ever known. While there is clover in abundance, for some reason it is not yielding the nectar it should. If the crop of honey hereabout amounts to half of a normal yield I shall be surprised. There has been practically no sale for hives, and the demand for sections and foundation is very light. I understand there has been an almost unprecedented honey-flow in Indiana. It has certainly sidestepped Ohio if my trade is any indication.

Zanesville, Ohio, July 11.

E. W. PEIRCE.

Reports early in the season were very discouraging. However, for the past three or four weeks we have had some very favorable reports which lead us to believe that the honey crop for the central West will be about an average one. Last night I rode home with Mr. York, and he told me that a letter from Mr. France yesterday informed him he had already harvested a crop of 30,000 lbs. Orders for shipping-cases have been coming in quite fast for the past few days. This would also indicate that there is honey in sight.

Chicago, July 12.

THE A. I. ROOT CO.

per R. W. B.

We hope to present the facts as accurately as possible, and to this end again urge our readers to co-operate by sending comprehensive but brief reports. The sooner the actual conditions can be known, the better.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

MORE THAN ONE egg in a queen-cell is a sign of laying workers; but this year a queen-right colony had two queen-cells, side by side, with two eggs in each.

JUNE 8, bees were at the point of starvation; June 22, there were 259 supers (some of them empty) on 109 hives; and June 29, there had been taken from the hives 32 finished supers of 24 sections each.

"NEVER ALLOW bees to hang outside the hive." That's the advice given in one of the best books published. Isn't that "never" rather sweeping? On a hot night after a hard day's work, or even in a hot day at close of harvest, I would not feel hard toward a strong colony if it should want to get outside where it's cooler.

REFERRING to page 428, if I should put an empty super under a brood-nest my bees would surely build down. When I used a false bottom with a space of $1\frac{1}{4}$ inches under it, the bees filled the space with comb, and they will build down more promptly in an open space. But Mr. Lemon can safely put an empty super under if he puts two or three bottom-racks in it.

THE SWARMING referred to by O. E. Buchanan, page 426, is *after-swarming*. Piping and quahking may always be heard the evening before an after-swarm issues, sometimes longer before—no piping before a prime swarm. H. E. Harrington, page 425, says piping may be heard "about four or five days after the first swarm has issued." It is generally about three days later than that.

HENRY STEWART's article, p. 415, is all right for European foul brood; but the heading and the first word of the article says "American." If he really means American foul brood he is butting up square against Alexander, and I guess everybody else. [Mr. Stewart seems to be describing American foul brood, and we have been informed that there is no European foul brood in his vicinity, hence the heading of his article. Explain how he is square up against Alexander.—ED.]

LINK BY LINK cold business sense is helping to forge the chain to bind King Alcohol. At a recent examination for public chauffeurs in the city of Chicago, "those taking the tests were forced, under the new law, to swear they would not touch intoxicating liquors while on duty, agreeing that their license be taken from them if they are detected with the odor of liquor on their breath, and they be barred from ever again driving a public automobile in Chicago." [But is he as good a chauffeur on duty, if he drinks when off, as he would be if always unalcoholized?—ED.]

MORE AND MORE I like the idea of having an empty super on top. It serves as a safety-valve, so that, if the bees are at any time crowded for room, they may begin work above. If they don't need the room, it does no harm. Next time around it can be put down next the brood, and another empty put on top. [This idea of putting an empty super on top, whether the bees need it or not, is excellent, especially in a season like this. This is a subject well worth discussing.—ED.]

F. J. ROOT, page 410, talks sensibly about advertising, and then asks, "*What are you going to do about it?*" Nothing, my dear fellow; not a thing. At least if one may judge from the past. More's the pity! [It is indeed true that the bee-keeping public have not put enough emphasis upon the selling end of the business. The editor of the *Review* has recently started out on this campaign. We shall be very glad to welcome more articles on how to dispose of the crop after we once get it. Apparently for this season we are going to get a crop, and some bee-keepers are going to have difficulty in selling at good prices.—ED.]

THE QUESTION as to the sex of eggs laid by the queen is up again in *L'Apiculteur*, among the theories being the one that all eggs are alike, and the workers have the power to settle the sex. One of the things cited to support that belief is that workers are sometimes reared in drone-cells. The thing that surprises me is that it seems to have escaped these observers entirely that no worker is ever reared in an *unmodified* drone-cell. I've seen workers reared in drone-cells a number of times; but before the queen laid in them the workers always contracted the entrances of the cells to make them the size of worker-cells. Are my bees the only ones that do this?

FORMERLY I allowed about $\frac{1}{2}$ -inch ventilation under the super at the back of the hive. It helped, I think, to prevent swarming; but the bees were slow about sealing the sections next the opening. Then I allowed a crack just large enough for only one bee to crawl through. Sometimes (I think in a full flow) the ventilation did not seem to hinder sealing; sometimes (I think in a slow flow or cool weather) it hindered. But this year the sections next the opening are finished before those at the other end of the super! Perhaps because it is very hot. I think this opening at the upper back end of the hive much more effective in keeping down swarming than three times the opening at the bottom, as it allows ventilation clear through the brood-chamber. But even with ventilation at both places I have more swarming than I like. [You say that you think that ventilation at the upper back end of the hive much more effective in keeping down swarming than three times the opening at the bottom. This is a rather interesting question, and we hope our subscribers will discuss it, especially those who have tried ventilation at the top.—ED.]

Bee-keeping in the Southwest

By LOUIS SCHOLL, New Braunfels, Texas

Shallow-frame hives, or, rather, divisible-brood-chamber hives, are bound to become the standard for best all-around results after awhile; and the ten-frame width. Their advantages are too great not to be found out.



Our experimental queen-rearing yard, to determine whether it is profitable for the honey-producer to rear his own queens, is showing some favorable results in the very fine, large, and prolific queens we have turned out for our apiaries so far; and as we get it better established with all the necessary equipment, and running on a proper schedule, I think it will prove that it is profitable for us to rear our own queens.



Seeing those various contraptions and many different ways of wiring frames, pp. 232 to 234, reminds us of the slow, tedious, and disagreeable work we detested years ago when we had only deep frames which had to be strung with wire. Why not use shallow frames without wires? That is what we have done for years. It saves wire and time, and other extra expense, and still lighter foundation can be used. The time will come when the shallow frame and divisible hives will become standard.



CHUNK OR BULK COMB HONEY.

Enquiries have been sent me several times relative to chunk honey, and I have been requested to write an article on that subject, covering all the different phases of production, etc. To this I must say that it would be utterly impossible to do it in one or even two articles, even if I had the time during this present, my busiest season of my life. A little later, perhaps, this may be possible. I write this to answer several enquirers so they will not await the article and become disappointed. Besides, I should like to call attention again to the fact that we do not fancy the term "chunk honey" in the place of "bulk comb honey." Since this should be the proper name to use, I mention it again. Most of the correspondents use the term "chunk honey."



AN ABSURD ACCUSATION.

Of all the absurd articles, none has come up to the one on page 376, under the title of "Chunk Honey North and South." It can hardly be attributed to the ignorance of the author of said article, since he comes out boldly with the statement that he has "traveled to no small extent in the Lone Star State, the last time about three years ago." However, his opinion of Texas is a very poor one indeed. The idea of the comparison

made between the State of Texas and her people and other conditions with that of a little part of the country that he resides in is also absurd. Why! we have enough fertile country in Texas to cover up Iowa nearly five times over, and then have a good deal of this fertile land left, to say nothing of the enormous quantities of rock, gravel, sand, etc., which are all considered by us as of much value, if for nothing else than the up-to-date construction of concrete structures and buildings on the vast areas of the most fertile soils.

Not only is Texas richest in a great majority of just such things, and ahead of all her sister States, but her people are not so poor as the writer above mentioned tries to make them. If anybody doubts this let him come and assure himself. We are not so poor down here that we are not buying automobiles, diamonds, etc.; but when it comes to section honey we go further with our delicious *bulk* comb honey; and since we are rich enough to buy honey we are able to use up our own enormous annual production long before the season is over, although the great Lone Star State is the greatest producer, and that at a higher average price per pound than is obtained in the North, and this in spite of the scanty population and the very poor (?) people at that. Can you blame the "over-enthusiastic Te-hana friend" for believing that it is possible to do even better with bulk comb honey in the North?

Our prices are so high here in Texas that 38 cents for a quart Mason fruit-jar of bulk comb honey would be considered a very low price, or one which only the backwood farmer bee-keeper "who never reads a bee-journal" would sell at. Fifty and sixty cents is what we find them selling at, and such figuring as allowing so much for the return of the jars, yea, and "at a cent less on account of the loss of the rubber" is a thing unheard of. Besides, we use better packages for our bulk comb honey than the distasteful common Mason jars, and get a more fancy price.

Still better are the Texas standard sizes and styles of honey-cans and honey-pails (also our own) for bulk comb honey. The 3-lb., 6-lb., and 12-lb. friction-top cans and pails are the most preferable package for the retail trade, and others too, while the consumers prefer to buy the 60-lb. cans from us direct; and we get 11 cents per lb. for this in 120-lb. cases or more, f. o. b. our shipping-point, sight draft attached to bill of lading, insuring our pay for the honey in all cases. The smaller size of cans in case lots sell from 2 to 3 cents per pound more. Add to this the freight to the retailer, his profit, and then you will find that we do not sell our honey at a low price. The average selling price is about 15 cents, and, besides, selling our own millions of pounds here in the great Lone Star State, carloads of honey are shipped in from other States. Does this show that we are a poor class of people down here? Not much!

Siftings

By J. E. CRANE, Middlebury, Vt.

The steam uncapping-knife appears to be one of those improvements that do not need to be improved upon before it becomes practical. See page 185, March 15.

On page 224, April 1, is a map of Texas with more than a dozen other States just thrown right into it. But isn't it a whopper, a regular Jumbo? It produces some big men, too, to say nothing of large beekeepers.

My congratulations to L. F. Howden with his motorcycle, p. 187, Mar. 15. There must be quite a difference between going ten miles in fifteen or twenty minutes, and plodding for two hours, as we do with our slow horse to a yard ten miles away.

I notice on p. 243, April 15, Prof. Waugh is quoted on spraying. He was for several years professor of horticulture at the Vermont Agricultural College, and certainly is good authority on fruits, and has always been the friend of the bees.

I have always been surprised at the large numbers of colonies reported to the square mile in Germany. Explanation given in a Straw on page 172 will help us out. An average of 2.86 colonies to the mile isn't so great—guess we can match it here in places.

That Stray Straw, with note on keeping honey in a warm place, can not be too often repeated until we all know enough to keep comb honey in a warm place. Honey will not only not granulate in such places, but "resist the effects of changing temperatures better." It will also improve in flavor instead of deteriorating.

That is a capital idea, Mr. Editor, p. 242, of having all hives ten frame, and then change the capacity by the depth of frame. After more than forty years' experience I am satisfied that the ten-frame can not be improved upon for the average location. If I were starting anew I would use a ten-frame hive, using a division-board, and reducing to seven or eight for winter.

Another article is by E. R. Root, on the agency of bees in fertilizing plants by the mingling of pollen. Too much can not be said in praise of this article with its illuminating illustrations. Well says Dr. Fletcher, "A study of the devices provided by nature to insure cross-fertilization forms one of the most charming branches of the whole study of botany." If this article is a fair

sample of the forthcoming edition of the A B C and X Y Z of Bee Culture, it may well stand at the head of all "bee-books," as, indeed, I have for some time regarded the last edition.

F. Greiner objects, page 181, Mar. 15th issue, to paying 25 cents for 4 oz. of honey by travelers. I think it is no higher than other items of the bills of fare on dining-cars. I recently ordered at a large hotel a small piece of fish, surely not over a third or half a pound, and the price charged was 50 cents. The cost to the house could not have been over six or eight cents. Oh! I forgot. There was, perhaps, one or two ounces of bread with it.

Several scientific articles appeared in the April numbers of GLEANINGS that call for notice as of more than usual interest, especially those discussing the pollination of apple and other blossoms. First, that by Prof. C. L. Lewis and C. C. Vincent, on the pollination of apple-blossoms, so fully illustrated that any farmer's boy of fair ability can engage in the fascinating pursuit of producing new varieties of fruits. I can not tell how much I should have enjoyed such an article when I was young or after I learned that different varieties of corn would cross when planted near each other.

I fear there may be some disappointment in working the theory of preventing honey from granulating by sunlight. Our own experience has led us to believe that sunlight helps to hasten granulation. We had occasion some time ago to open a case of 24 pound bottles of honey that had been put up some three or four years; and while some showed considerable granulation, most of them showed very little. I feel sure if they had been exposed to the light they would have been all solid. We prefer to bring clover honey to 160°, raspberry honey to not over 150°, bottle at once, and pack in cases with corrugated-paper fillers, and let it cool very slowly. Not only will frequent changes of temperature hasten granulation, but I believe a sudden change much worse than a slow change of temperature.

Mr. Edward Diener, page 249, discusses the retail problem interestingly, and also refers to the economic problem that is troubling the country so seriously while everybody is pointing the finger at some one else as the cause. Especially are the trusts blamed, and yet sugar is cheaper than before the sugar trusts were in existence. Kerosene is much less than before the Standard Oil Co. Tin cans that would cost \$45.00 per 1000 before the manufacturers went into the trust we have bought of that "trust" for \$29.50. Fifty years ago, farm laborers worked thirteen or fourteen hours, while now they think themselves abused if asked to work more than ten hours. The same reduction is found in other pursuits, while the laborer

wants a larger price per day for fewer hours. As labor is a very large factor in the cost of all useful products, has not the increased cost of labor been a large factor in the increased cost of living?

Virgil Weaver appears to be the honey prophet of the country, and he has had pretty fair sailing so far. Now it seems to me that it does not require a great amount of foreknowledge to say that we shall get a good crop after a very poor season, or that we are likely to get a poor crop after a very large one. Moses Quinby used to say that a poor season was likely to follow when bees had wintered unusually well; but I believe his observations were founded on the fact that bees winter better than the average years after a good season, and badly after a poor season. Now we are confronted by an unusual condition this spring. Bees have generally wintered unusually well following a very poor season. Clover is looking well, and I think we may at least hope for a good year.

Dr. Miller, page 208, April 1, says I'm naughty trying to drive him out of business by advising one to locate where stones are not necessary to keep covers from blowing off. Say, doctor, I didn't mean that. I just meant if you can't find such a place just make it. Plant a row (or, if very windy, two rows) of evergreens on the windy sides of your yard, and then there will be no need of stones on top of your hives. It's "awful" windy where my own home is; but an evergreen hedge on three sides of my bee-yard makes it warm and quiet. I moved a yard of bees last winter just to get out of the wind, and the new yard is surrounded by hills and forests; and when the cold north winds blew in April it was as warm in there as June. Oh, my! but wasn't it nice? and the 16th of May that yard threw off four good swarms—the earliest I have ever had bees swarm, just to show their appreciation of their new yard, and, perhaps, to celebrate my seventieth birthday.

The grouping of hives, given by the editor, page 206, April 1, is one of the best. I add to it, however, by making each group ten, and face them to all points of the compass, which works well where the yard is free from heavy winds. I moved a yard last winter, and, as a sort of experiment, set it in rows. There were 120 hives, about 75 containing bees. They were set in six rows, the rows a rod apart, and eight rods long, twenty in a row, and — well, it would puzzle an experienced bee-man to tell which hives contained the bees by the number of bees flying out and in the entrances. Indeed, there were more at the entrances of some of the empty hives than those containing combs of brood and honey. Opening some of these empty hives we find dead bees and others bewildered and lost, and ready to give up. I have now

painted the hive-fronts "all sorts of color schemes, and set out small trees and shrubs, but without much improvement.



WHY SOME REPORT BREAKAGE FROM THE CORRUGATED SHIPPING-CASES.

Our friend Louis H. Scholl, page 174, Mar. 15th issue, cautions bee-keepers about the use of corrugated-paper shipping-cases, evidently from good motives; but his advice somehow seems a little defective. If anxious to save inexperienced bee-keepers from loss, why does he not discourage shipping by express, which is much more certain to give broken combs than when shipped by freight? I don't know much about the freight business in the West; but Mr. Foster, of Colorado, complains of a great deal of breakage, even when shipped by freight, although he says, page 138, Mar. 1st issue, that the straw-board case will stand rougher treatment than the wood case. Would it not be a good thing to say to those who, in the West, get their honey broken, that it is safer to ship by freight than express? and, secondly, if broken when sent by freight, to pack in carriers holding 150 to 200 lbs., with hay or straw in the bottom? If this way is not an entire success, I will tell you what to do. Make a strong box that will hold, say, 20 or 25 cases, 400 or 500 lbs., of honey. The shape should be such that your cases will just fit in nicely. Nail some strong cleats on each end on the bottom, and on to these fasten four strong casters, one at each corner, with strong screws. Such a box or carrier, freight-handlers or truckmen can not or will not lift, and, of course, can not throw, but will roll along on the floor or platform of the railway stations. I have shipped in this way small lots of honey for hundreds—yes, thousands—of miles, without breakage. On page 169, Mar. 15th issue, the editor suggests that the reason we have had as good success in the use of paper cases might be that we use a paper carton on each section. I have sometimes wondered myself if that had not something to do with it; but I think now not much, as we have used cartons on our sections for fifteen or twenty years, and dealers recognized very quickly the better condition of honey in the paper cases as soon as used. But how did those two cases reported by Mr. Scholl get used up worse than the wooden ones? "I don't know." Perhaps in this way: About eighteen months ago I went to the capital of our State to see what could be done to secure a foul-brood law. While waiting at the station for my train to return, another train pulled in, and I watched the expressman unload his express. Presently the conductor came round and said, "Hurry up, there; don't stop to read everything. We want to get to Williamstown by" such a time; and then the way the express came out was a caution, some of it landing on top of the truck standing on the platform by the car-door, and some of it not stopping until it struck the ground six or eight feet below.

Conversations with Doolittle

At Borodino

CROSS BEES.

My bees, since the harvest of white honey ended, are cross and ugly. What can the matter be?

Perhaps you have allowed them to have access to stolen sweets, so that they got to robbing. If you want to make bees very cross, let them have access to honey from other hives while you are at work in the apiary till they get to fighting, and finally to robbing some of the weaker colonies; or let them get into the honey-house and get started there on your new honey, and you will be sure to have a row.

We once stored our section honey in a room just off the sitting-room. The door to the one in which the honey was stored was supposed to be kept shut, and the windows in the sitting-room were kept darkened to keep out the flies at all times when we did not occupy this room. The window of the room in which the honey was stored was also made dark by shutting the blinds, for the same reason. One Sunday morning, just before going to church, I went into the honey-room for something, and in my hurry left the door open when I came out. While I was hitching up the horse Mrs. Doolittle went into the sitting-room, leaving the door open while in there for light. This was at a time of a great dearth of nectar, a few days after the basswood harvest closed. Probably a bee or two came into the sitting-room while she was there, having smelled the newly stored honey in the room; and as I had left the honey-room door open, of course they found where the stored sweets were. As we drove into the yard after church we were greeted by angry bees, and I had difficulty in getting the horse into the barn. By covering our heads with bags from the barn we found our way to the house, and were glad to get inside the kitchen. By peering through one of the kitchen windows I discovered that the bottom of the sitting-room door, and nearly half way up the front, was covered with bees fighting to get in, while there were hundreds taking wing, all the while carrying off the honey. Around on the opposite side of the house was another door not often used, which led into an unused hallway. I again covered my head, went to this door, unlocked it, and went in. Arriving at the sitting-room, for a moment I could see nothing on account of the dark, but presently, as my eyes became accustomed to this I discerned that there was a crack under the bottom of the sitting-room door, large enough to admit a bee the whole width of the doorway. As my eyes became still more accustomed to the dim light I discovered a stream of bees nearly as wide as the crack under the bottom of the door, all traveling on foot in the dim light across the sitting-room, through the door into the

honey-room, up the walls to the honey stored on shelves all around the room, not a single bee taking wing, nor giving off a sound — only a contented murmur. In all, the bees traveled not far from twelve feet to the honey and the same number of feet back to the crack under the door.

My first thought was to shut the honey-room door; but I knew that would kill lots of bees and make a bad mess of stickiness and dead bees about the door, so I opened the window-blinds from the outside on the window to the honey-room. This immediately put thousands of bees on this window; and while they were collecting there I slipped back to the sitting-room and opened the door where the bees were going in at the crack under the same. As soon as this was done I took advantage of the bees going to the light by flying each way, and shut the door of the honey-room. As this door shut tight, it stopped operations from the sitting-room, and two hours later nearly all bees had left going in at the open door. The window was taken out from the outside, when it was put back as soon as most of the bees had been jarred from it, and before the news was carried that there was another way to the honey. An hour later the window was again taken out, when all of the bees were gotten rid of. In all we had a loss of about 200 lbs., and probably nearly as much more by the honey being partly carried out of the combs.

But if there are no sweets exposed, you may have been handling your bees improperly. Bad handling is even worse than robbing, for a bee made angry from reckless handling will follow one around the apiary for days and even weeks, stinging whenever a chance is offered, while the crossness coming from robbing ceases with the end of such thieving. I have known bees made so cross by careless handling in taking off honey on a dark cloudy day in the middle of the honey harvest, when there was no disposition to rob, that not a person could get out of the door to the house on the side next the bee-yard for a week without getting stung. Let the bees alone as far as possible till things quiet down, and then keep them quiet by proper management.

By a little careful attention any apiarist will soon learn the disposition of each colony in the apiary. Some colonies will submit to all the needed manipulations during the season without smoke, or the use of a veil. Others need both, while a few must be thoroughly subdued with a volume of smoke blown in at the entrance, before each and every manipulation, and, failing here on these colonies, and especially at a time of scarcity of nectar, a row is sure to be the result, with cross bees following about the apiary for the next week or ten days. With most colonies a puff or two of smoke blown in at the entrance, to startle the guards, and a puff or two over the tops of the frames or the supers, when the cover is lifted, is all that is needed. Don't try this on a very vicious colony, however.

General Correspondence

CAN COMBS AFFECTED WITH AMERICAN FOUL BROOD BE FREED FROM DISEASE?

The Details of the Two Plans Followed for Curing an Apiary and Producing a Crop of Honey at the Same Time.

BY HENRY STEWART.

Continued from last issue, page 417.

Before taking up my methods of treating foul brood, it might be well to confess that they are not infallible, and I would liken them to the cultivation of a field of corn. If the conditions are favorable and the work is properly done, the first cultivation should get most of the weeds; but a few will be left for a second and third, and even in the fall a few weeds might be found although the crop was secured.

The conditions for the best results by my methods of treating foul brood consist of a good honey-flow. Without a honey-flow in the honey-producing season I never attempt to treat foul brood by any method. In the spring, or as early as practicable, I make a hasty examination of every colony by removing one of the center combs and looking for foul brood. Whenever I find it I tack on the front of the hive a piece of section on which is written the word "Foul." Early in the spring I contract the entrance of every hive, the foul-broody ones needing greater care than any of the rest. All weak colonies should be united and the whole apiary closely watched. The proverb, "An ounce of prevention (to keep bees from robbing) is worth a pound of cure," is never more true than when watching foul brood.

My next operation is about the time of the beginning of the first good honey-flow—probably fruit-bloom. At this time I again inspect every colony as before; and if I find any new cases I mark them. At this time nearly a half (and often more than half) of the combs contain no brood, and in the majority of these combs no trace of the disease from the year before can be found. I now go over all colonies marked "Foul" as follows: I go to No. 1, remove the outside combs that appear to be clean, take them to No. 2; inspect first the outside combs, and leave all that appear to be clean. I then brush the bees from the others that are not clean, and in their place fill in with clean combs from hive No. 1. Then I mark this hive (No. 2) with the letters "C. F." and the date, meaning that this hive is cleaned from foul-broody combs. After this I put back in hive No. 1 the diseased combs and brood that I removed from No. 2. I follow this plan throughout the whole year, taking care that No. 1 has sufficient bees to care for the additional amount of brood. If the work is properly done a large percentage of those marked "C. F." will remain clean.

Any colonies that do not, will contract the disease in a mild form; and unless all such are strong enough they should be treated by the second method. This second method may be resorted to at any time during the honey-flow when the individual colony has sufficient strength to work in an extracting-super.

Referring again to the honey-board described in my first article, I will now give my reason for making the board of solid wood with the exception of a strip of queen-excluding zinc containing two rows of slots lengthwise through the center of the board. My reason for this is to prevent, as far as possible, the siftings of diseased matter down on to the brood-combs below from the diseased combs above. If there is any thing in this, it would appear that the Crane honey-board, as described in the December 15th issue, 1908, having a solid center and queen-excluding openings on each side, might be just as effective, and possibly more so, as the siftings over the brood-nest would then be more nearly shut off.

My second method, referred to above, is as follows: I prepare a hive with a set of clean combs, or with full sheets of foundation, in either case using a frame containing some honey and a small amount of brood taken from a healthy colony, placed in the center of this newly prepared hive. I next secure the queen and place her upon this frame of brood, at the same time removing the old hive from its bottom-board, putting this new one on the old stand in its place. As soon as the field bees have found their queen in her new quarters I place my honey-board on top, and over it put the old hive containing the diseased brood. Lastly I put on the cover and then leave the hive alone for two weeks, at the end of which time it is well to remove any queen-cells that may have been started in the upper hive.

Right here I will mention one feature of my honey-board that I did not say any thing about. There is an opening through the back end of the board, $2\frac{1}{2}$ inches long by $\frac{3}{8}$ wide. This is to provide a flight-hole so that the bees from the upper story can work independently of those in the lower story. These slots should be closed at the start to force the workers through the new brood-nest. The tendency is for the bees to go to the brood and desert the queen. The one comb of brood is put below in the new brood-nest to offset this tendency and also to prevent the queen from sulking, or leaving the hive altogether.

The set of foul-broody combs now becomes an extracting-super, and it should be left until all the brood is hatched and the combs are filled with honey. If the bees need more room, another story in extracting-combs should be added; and when these combs are filled with honey, it matters not how foul they may have been, they are now, together with the honey in the cells, as pure as the purest. As soon as the new brood-nests become well stocked with brood they should be examined; and if in any of them foul

brood is found, the set of combs above, as soon as all the cells contain honey, may be extracted, the queen placed on them, and the position of the bodies reversed and treated as at the start.

Some time before the close of the honey season, which in this locality is in September, I make another general inspection of all my colonies; and if any disease is found I mark the hives. When I finish extracting I leave on the hives a sufficient number of clean filled combs to exchange later in the season for any foul-broody ones that I find. I now wait until all brood-rearing is over, which is about Nov. 1, then I remove from each foul-broody colony all the combs and in their places put a new set of clean combs containing a sufficient amount of honey for a winter supply. As there is no brood-rearing going on at this time, this method is very sure.

WHAT IS TO BE DONE WITH THE DISEASED COMBS?

The diseased combs may be saved until a good honey-flow, when they may be cleaned up, filled with honey, and extracted; but unless the owner has a good safe place to keep them, and considers them of much value, I think it is a good practice to extract the honey and render the combs into wax.

I have been much interested in the articles recently published on plans for getting rid of European foul brood. I have had no experience with this disease, but would suggest that the reason why American foul brood appears to be more difficult to handle in this way than European foul brood is that, in the former disease, a much larger per cent of the brood dies after being capped over, and these capped-over cells are not so readily cleaned up as the uncapped cells. However, when the combs are full of honey the bees have made a thorough job of it and the combs are then clean.

Prophetstown, Ill.

CLEANING OUT BAIT SECTIONS AND EXTRACTING-COMBS AT THE CLOSE OF THE YEAR.

How to Avoid Fighting and Robbing.

BY G. C. GREINER.

This is an old subject, discussed and talked about time and again; but I believe there are some points connected with it that have never been mentioned.

To prevent the gnawing of combs, one of our prominent writers advises reducing the entrance to a single bee-space. This may have the desired effect; but in my opinion there is a better way to accomplish the same result, but in an opposite direction. The small-entrance plan seems faulty in more than one respect.

We are told to reduce the entrance to guard against robbing. How can we expect that the same device can be a protection in one place, keeping robbers out, when at the

same time, only a few steps from it, we make it as inviting as we can to coax robbers in? Isn't this a little inconsistent?

Then the small passage causes a terrible jam. It is a continual crowding and fighting to see which will be first, either going in or coming out. The wear and tear of bee-life in trying to get at the tempting sweet is entirely needless. A little different method will prevent all this trouble.

Again, the reduced entrance greatly delays the job. What is the object in prolonging the anxiety and efforts when the whole business can be done in less than two hours' time without the least crowding or fighting among the bees?

Another unpleasant feature in connection with small passages is the excited condition of the bees; they will sting everybody, far and near, if they have to fight to get at exposed honey, and they are all the more excitable if this work has been delayed until all natural sources have ceased to yield honey.

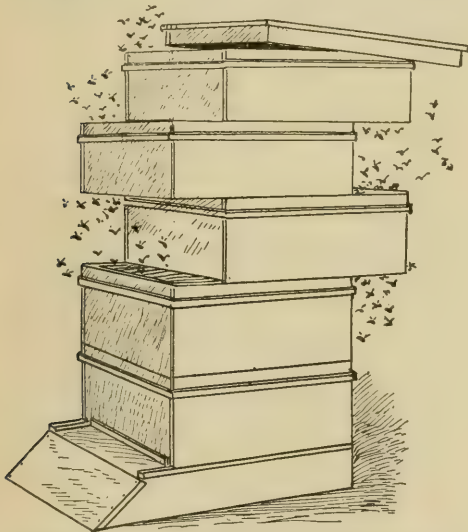
The plan I have followed for years is something like this: When I strip my colonies of all their supers at the final ending of the honey season, which is generally during the fore part of October, these supers are taken, one after another, directly from the hive to the honey-house, and extracted. They are then stacked up as high as I can reach, in rows, on the west side of my beeyard. All my hives face the east, so that the supers are placed, as you might say, behind the bees. Every first or bottom super is set on a hive-stand with the hive-bottom in its proper place; and every entrance so formed (all supers with regular hive-bottoms are perfect hives) is securely closed, using one of the sawed-out rabbit-strips as an entrance-block. The bait sections are sorted out as soon as possible, and stacked in like manner after all capped honey they contain is scratched with an uncapping-comb.

During the accumulation of supers all beestacks are kept perfectly tight, and covered. Not a bee is allowed to get a taste until all combs, baits and extracting, are ready for the cleaning. I select the first pleasant warm day; and if there is still a little fall honey coming in, all the better. I wait till about 3 o'clock; then I open the whole outfit from top to bottom, except the crack between the two lower supers and the regular hive-entrance at the bottom. This latter I keep closed, for I do not wish to show my bees the way that might lead them into mischief later on. All openings are either at the back or higher up, where they could not find an entrance in a common hive, if they should take a notion to look for trouble.

The accompanying drawing shows one of the stacks when opened for the bees. It takes only a very few minutes for the jubilee to begin. It seems as though all the bees of the yard were summoned by magic to this very spot. But there is such a large area of accessible honey, and no restriction whatever against entering and partaking of

it, that there is no fighting nor crowding, and the bees are too busy to attack any one. I frequently walk right through the thickest of them without veil or protection of any kind, and am hardly ever molested by a single bee. It is the crowding and fighting that makes them ill-tempered.

As the day draws near its close, the multitude of bees decreases, and by sundown every thing is quiet again, and that is all there is to the cleaning process. As soon as the last bees have left I cover up and make every thing bee-tight as it was before. Under no consideration would I leave any combs exposed after dark, for that is the time when the wax-moth gets in its deadly work. Being late in the season, the danger from that source may not be very serious; but I would rather err on the safe side. Adhering rigidly to this precaution I never have any trouble with worms in my extracting-combs nor in section honey either. To fumigate is almost an unknown term to me. I have had no occasion for its practical application in twenty years or more.



GREINER'S PLAN FOR CLEANING OUT EXTRACTING-COMBS AT THE END OF THE SEASON.

Taking every thing into consideration, the plan I outlined above is undoubtedly the simplest and most practical in use. But it has this drawback: All honey thus fed back to the bees is distributed in a promiscuous way. All have not only an even chance, but the strong colonies that need it the least get the most, while some that may really need feeding get very little. However, to counteract this difficulty we have a way out. It is an easy matter to reserve at our last extracting a few dozen, or as many as we may need, of extra-heavy combs of honey, and use them to supply the needy ones. This is by far the easiest, most complete, and least labor-requiring method that

we can employ to supply our light colonies with their necessary winter and spring stores.

La Salle, N. Y.

THE HONEY-FLOW IN HOLLAND.

Some Observations on it for the Last Few Years.

BY HENRI MEYER.

In our bee-calendar the years 1906, '07, and '08 are booked as bad honey-years. The worst of the three was 1907—a year of very little sunshine, of heavy rains, thunder and hail storms. In August, 1907, the minimum temperature went down to freezing for several nights. On the best days the maximum temperature scored 50 to 56° Fahrenheit. During the whole month on which our last hope for a satisfactory heath crop was fixed we suffered from cold, rainy, and windy weather. Practically we did not see the sun for weeks. On the heath we lost millions of bees. Many bee-keepers who do not look after their colonies before the end of the heath season found more than half of them dead and the rest starving.

On a heath six kilometers from Arnhem I discovered a range of old straw skeps, the property of a bee-keeper residing at Tiel, some forty miles from there, in which not a single bee was living. The poor man's whole possession lay in a state of putrefaction on the bottom.

The end of the season was fit to make the most patient bee-keeper rebellious. When the heath had faded we got splendid weather. September and October brought us the long-desired warmth. In the last days of the latter month we noted a temperature of 70° F. in the shade. But it was all in vain. The mild weather in the late fall could not undo the evil done by the February temperature of August. In some parts of our country the bees gathered some nectar and pollen from the "herick," a sort of wild-rape seed (a very troublesome weed) producing a dark-colored honey which is said to be a dangerous winter food.

Thanks to the splendid fall weather, we succeeded in feeding up the weakened colonies with sugar syrup to a reasonable weight. Nevertheless a severe and irregular winter with intermittent periods of strong frost and abnormally soft temperatures caused heavy winter losses. This was especially the case where the winter food consisted of a syrup from white-beet sugar. A neighbor bee-keeper who fed his 30 winter colonies with 300 lbs. of beet sugar lost them all, notwithstanding the winter provision was capped and the condition of the winter seats in the thick-walled Gravenhorst straw hives left nothing to be desired. It seems that the chemicals used to purify the beet sugar must be poisonous to bees.

After this bad winter we got a most promising spring; and with good hope for better

success we opened the campaign by migrating with the remainder of our living capital to the fruit-orchards of the Betune. It must be explained that in Holland no profit from bee-keeping is possible unless one follows the bloom. In early spring (that is, the first days of April) the bee-keepers of the high sand grounds in the Velune remove their colonies to the rich clay districts to gather the nectar from hundreds of acres of apples, pears, cherries, and strawberries. Considerable quantities of honey are stored there by the bees when the weather is favorable. On account of our changeable climate, however, no bee-keeper should think of extracting that honey. Our bitter experience forbids this. Indeed, after a rich honey-flow of some days a sudden change of the weather may bring frost, snow, and hail. So we must leave the superior spring honey to the brood.

In other parts of our country, in South and North Holland, Zeeland, Utrecht, Friesland, and Groningen, the spring flow consists mainly of the rich rape-seed field and the meadow honey-plant of which *Taraxacum officinale* (dandelion) is the best. In April and May some of our meadows, especially those that served a year before for hay-production, are literally covered with a golden carpet of dandelion.

When the fruit-blossom is over, a stagnation in the flow is apparent. The best colonies will then manifest the first symptoms of swarming. For the amateurs of the "multiplicating system," a busy time begins. As a rule the first swarms are drummed off, and if conditions are favorable one single straw-skep colony will produce in a short time from three to four new colonies. In the meantime a new honey-flow is coming on. Some bee-keepers remove in the first days of July to the buckwheat-fields; others remain in the clay districts where white clover is abundant, and others hunt for a good place in the vicinity of lime-trees and acacias.

When the weather is just what we want, there is possibly no stronger honey-yielder than buckwheat. But it must be said there is possibly no other honey-plant that suffers so much from conditions and delicacy. Indeed, buckwheat in Holland will not yield surplus honey unless the weather is not too warm, not too cold, not too dry, not too damp. When the sun shines brightly, buckwheat gives nothing but pollen. When the soil is poor it gives nothing at all. When the soil is rich the farmer would be a fool to sow buckwheat, because other seeds would be far more profitable.

Now, Mr. Editor, last year some farmers grew in the immediate vicinity of my summer stand nearly ten acres of buckwheat. The soil in the environments of my home consists of diluvial sand, which has been cultivated, perhaps, a century. Phacelia, Spanish chestnut, and lime trees yield honey profusely on that soil. Fruit-trees, however, give nearly nothing. I had the choice of removing my bees to a good buck-

wheat district, ten miles from home, or try the buckwheat of my neighbors. I chose the last, while my neighbor bee-keeper removed to the buckwheat-fields near Lunteren, ten miles from here. Well, they returned from there with a hundred straw skeps full of well-capped buckwheat honey. And what about my honey crop?

Let me tell you I did not get a teaspoonful from the ten acres, and this notwithstanding the weather was favorable—not too dry, not too damp, not too hot, not too cold. What was the reason of this phenomenon? I can only guess. The soil in the vicinity of my home consists of sand with a very low ground-water level. You may dig there to a depth of sixty yards before reaching water. In the vicinity of Lunteren, however, the water level is about three yards below the surface. Besides this the sandy soil there is mixed up with old layers of mold, or humus, originating from old swamps. In the soil there I suppose there must have been an element not present in the high sands near my residence.

Mr. Townsend, in his interesting article about the honey resources in Michigan, p. 1104, 1908, says: "I do not include it (buckwheat) in the list as a surplus-honey producer; for on the rich soil of Southern Michigan it rarely produces any surplus; and when it does I think it would be when it is sown on a rather poor quality of sandy soil."

The quality of our high sand, however, was of the desired poorness, farmers here doing a lot of "business" with a small quantity of stable manure or compost, which will do for potato and rye culture; and notwithstanding that desired poorness of the sandy soil my buckwheat did not produce any honey. What was the reason? What was the missing substance?

Mr. Editor, I humbly believe that a bee-keeper must have a life as long as Methuselah's to know something about bee-keeping at the end of his days.

Arnhem, Holland, Dec. 4.

Starved-out Swarms.

I lost seven hives of bees out of eight last winter, and the remaining hive is weak. This eighth colony did an unusual thing about a month ago. It was in a big Dadant telescope hive, and early one Sunday morning my wife told me it was swarming. I knew it was very weak, and said "rats;" but she insisted. I then got out of bed, and, sure enough, they were. They swarmed out of the hive they were in, and entered a double ten-frame Dovetailed hive a few feet away in which the bees had died the previous winter. They were only about a quarter the size a swarm ought to be. On examining the hive they left I found it destitute of honey, and only a patch of brood about as large as the palm of your hand. The bees deserted it entirely. I think there was some honey in the double ten-frame hive they went into, and they are still living in it and appear to be increasing slowly.

Ben Avon, Pa., June 18.

H. P. JOSLIN.

[This is a clear case of a starved-out swarm. Little weak colonies or nuclei will very often swarm out in the early part of the season if they run out of stores. They will surely starve where they are; and if the scouts find a place, as they did in this case, where stores are available, they do the right thing, of course—swarm out.—Ed.]



N. A. BLAKE'S COMB-HONEY APIARY NEAR PASADENA, CALIFORNIA.

A COMB-HONEY APIARY IN THE ORANGE-BLOSSOM REGION OF CALIFORNIA.

BY N. A. BLAKE.

The engraving shows my home apiary two miles west of Pasadena. It contains 350 colonies in eight-frame hives which are run mostly for comb honey. I secure the comb honey from the orange-blossoms, the nearest grove being $1\frac{1}{2}$ miles away.

The trees shown are California oak, and in the center will be noticed some stalks of white sage that are just shooting up. Some of the colonies that built up this apiary were taken from the hills in the distance. We clip all our queens and make but little increase.

I have taken GLEANINGS 25 years. We sold our apiary in the far East nine years ago, and came out here and built up again. Pasadena, Cal.

HOW MUCH IS THERE IN SHAKING?

An Appeal for Actual Experiments to Test the Value of the Plan.

BY GEO. W. WILLIAMS.

The theory of shaking bees in a systematic manner with the idea of simplifying some of the various manipulations of the apiary and stimulating the waning energies of a stale colony has been discussed to some extent in the journals, both intelligently and otherwise. It is amusing to note the ease with which some decide as to the merits of things (in their own minds) without giving them a test, and, forthwith, proceed to

advise the fraternity. This display of personal egotism could be passed over with a smile if it were not sometimes a little dangerous. We can not afford to allow a valuable hint or idea to be laughed out of court without a fair trial.

Some time ago a theory was advanced by myself and others, supported on my part by 25 years of observation and practice, and by others on actual results claimed. The theory was that "shaking" (i. e., any extraordinary disturbance such as hauling bees over rough roads, transferring, shaking out on the ground, etc.), accomplished desirable results *per se*, and that this simple process in itself could be made to take the place of the more complicated manipulations.

Although last season was an unfavorable one for actual trials, some satisfactory progress was made in the achievement of results. The Roots report some measure of success in introducing queens by the shaking plan. They report good but not uniform success. They hope to find the cause of their failures. Bro. Doolittle reports a rather complicated plan for uniting by shaking which he considers a success. By the way, Bro. Doolittle, I have had uniform success by shaking the bees from the two or more colonies to be united upon a cloth, or even on the ground two feet from the entrance of a hive placed on either of the locations or any other desired, for that matter, alternating frames from the different hives, and allowing the bees to run in all mixed together, doing the work at dusk so as to be sure to get all the field-bees in. Others have reported more or less favorably, while a few like Mr. Holtermann "think" there is nothing in it.

Then on page 322, May 15, Leo Gately takes the position that shaking is illogical



BRINGING IN THE ABSCONDING SWARM IN A SECTION OF A BEE-TREE.

The entrance was closed by means of a handkerchief frozen on with snow. The ends of the log were closed with snow.

and meaningless, and is certain that the mere act of dumping bees out on the ground is of absolutely no value. He believes it to be an error to say that the act of dislodging the bees from the combs in a pile in front of the hive can bring results *per se*, and he can not see why this should bring an old colony into the psychological condition any thing near that of a newly hived swarm. He believes the increased activity manifested by a swarm is due to their broodless and not to their mental condition. As Mr. G.'s position is a purely negative one, unsupported

by any given facts, but based solely on his personal theory and belief, I will not answer his theories. But as it is doubtless his honest belief, and possibly that of others, I ask that all those who are interested in the matter conduct a series of experiments this season to find out how much value there may be in shaking in the different manipulations, keeping in mind that the fundamental claim made for it is that it puts any old colony, properly shaken, in a psychological condition more or less similar to a newly hived swarm. This principle, established or disproved, estab-

lishes or refutes any claims made for the system. So I would suggest that you compare shaken with natural swarms under the following conditions, always being sure that the swarms so compared are identical in size, race of bees, age of queens, and time of swarming.

1. Hive shaken swarms and natural ones alternately on empty combs.
2. Ditto on starters.
3. Ditto on one-frame of brood.
4. Return them to the old location on all the brood.



THE LOG SPLIT OPEN AND THE COMBS OF BEES REMOVED.

Then if you find, as I have done, that results are practically identical, it follows that the manipulations possible with a natural swarm are also possible with the other, and introducing, uniting, moving short distance, increased energy, etc., are possible after shaking, as we know that we can do these things with swarms.

As I have stated before, I have no ax to grind in this matter. Personally I do not care whether or not any one takes the short cuts made possible by shaking, thus increasing his efficiency. But I do feel the natural affection of a parent for his offspring, and desire to see the bees have a square deal, and then if they do not make good it is their own misfortune.

The season is right upon us to begin these experiments, and it gives promise of being a good one to put this idea into actual practice, as the best results have been apparent during a long and abundant flow (and, incidentally, I have noted that hybrid bees respond more favorably than any others). Above all, do not "think" conclusions, but *know* before you draw them.

Redkey, Ind.

AN ABSCONDING SWARM THAT WAS NOT CAPTURED TILL COLD WEATHER.

BY G. W. TEBBS.

Two farmers living near me purchased two colonies of my Italian bees about two years ago, and had good success so far as honey production was concerned. But when the swarming season came they had difficulty in securing the swarms, owing to the fact that their farms were situated in the midst of swamps connected with Puslinch Lake, which is about two miles in length. I advised them to cut the wings of their queens, and so keep them from flying into inaccessible places when they left the hive. Previously, however, some of the swarms got away into the bush, and apparently were lost for ever.

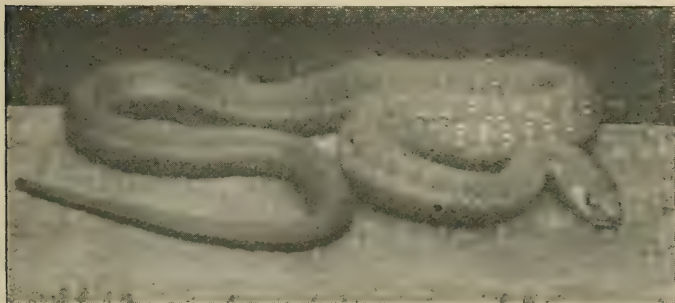
One day last winter we began to clear a portion of the bush about a mile from the hives, and in felling a big tamarack a cloud of bees flew out. When we examined the



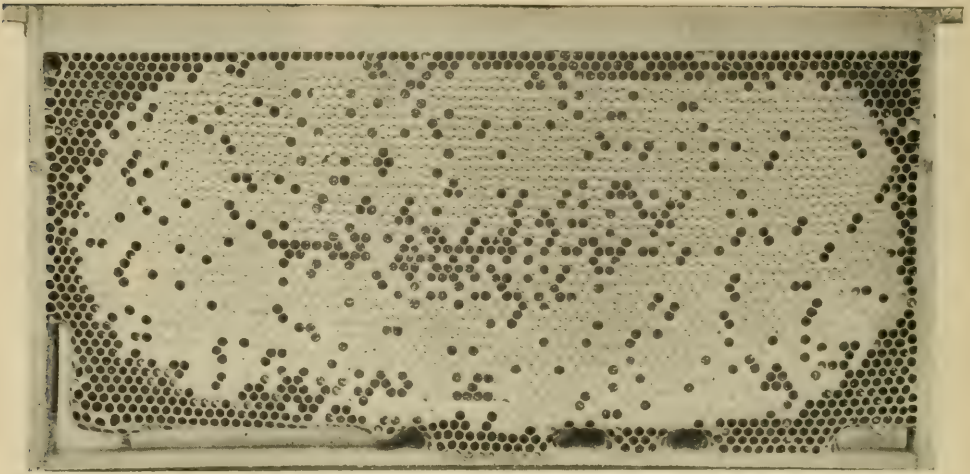
A SWARM FROM THE COLONY THAT WAS TAKEN FROM A BEE-TREE IN WINTER.

tree we found that the colony occupied about seven feet of the tree, the entrance being about nine feet from the ground. After allowing the bees to return we put a handkerchief over the entrance, spreading it so as to permit air to enter, and froze it on the trunk with snow, the temperature being about 14 below zero. We then sawed the log above and below the colony, filling the hollow ends with snow, and brought it home. We cut the log half way through just where we thought we could get at the bees, on either ends of the combs, and then

split off the sawn half, exposing the combs. This was done indoors. Then we transferred the bees from nine long combs to a hive of partially uncapped frames, packed them in the usual way for the winter, and brought them through in good shape. I shook the bees on to the frames in the hive, and extracted about 50 lbs. of honey from the natural combs, afterward melting them up. The log is preserv-



A GARTER SNAKE CAUGHT EATING BEES AT THE ENTRANCE OF A HIVE.



A NORMAL FRAME OF SEALED BROOD.

ed as a curiosity to those who have not seen a bee-tree when they visit my apiary. Somehow or other, *that* honey seemed sweeter and nicer than the honey we get in our regular way. Was it the novelty and the trouble that gave it its flavor?

Hesperler, Ont., Can., June 16.

NORMAL BROOD-REARING.

Some Characteristics of Races in the Matter of Brood-rearing; the Influence of Environment.

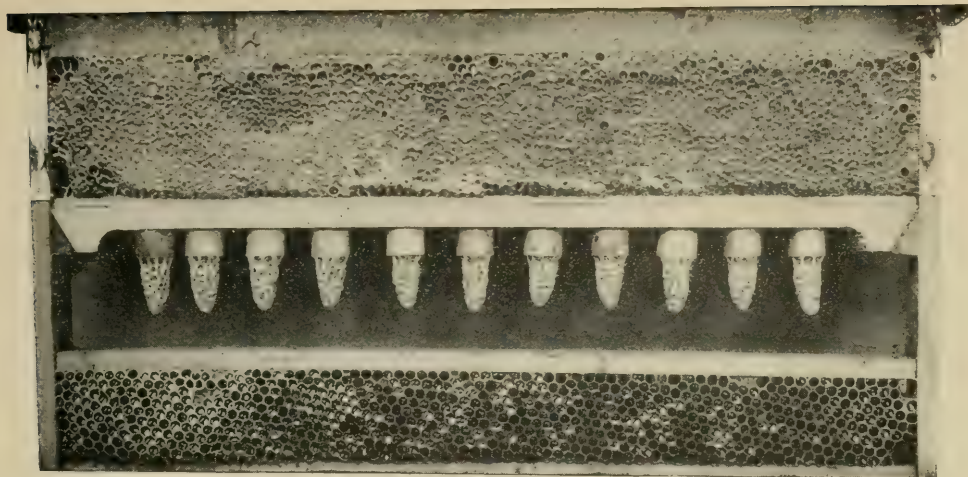
BY E. R. ROOT.

The accompanying photograph of a frame of sealed brood shows the work of a normal Italian queen under favorable conditions, or, rather, perhaps I should say, conditions during warm weather or when the colony is sufficiently strong so that the queen can extend her egg-laying clear out to the end-bars. While the camera was being posed a number of young bees emerged, or were just hatching, leaving a number of empty cells in the center; and before the exposure was taken they had to be brushed off in order to show a clean frame of brood. The empty cells scattered here and there near the margins of the comb contained pollen. So, taking it all in all, this would represent a good comb of sealed brood, rather fuller than the average. The queen had evidently laid all her eggs within 24 hours on this side of the comb. Most of this brood, probably, would hatch or did hatch inside of 24 or 48 hours.

This frame of brood is a little abnormal for an Italian queen, in that the brood alone reaches clear to the top-bar and almost to the bottom-bar, and comes a little nearer the end-bars than we usually find them. As a general thing there is about one inch or two inches of cells of honey near the top-bar. This is due to the fact that

there is apt to be a slight stretching of the cells near the top-bar—so much so that an Italian queen, at least, will not lay in them. The bees fill these with honey, or with syrup if they are being fed. An Italian queen generally won't come much nearer than one inch or an inch and a half of the end-bars. She may, however, reach clear down to the bottom-bar if the colony is fairly populous. On the other hand, if the conditions are just right for brood-rearing, and there is not much honey in the hive, the queen will fill out a frame just about as we see it here.

Recently I was looking over one colony of Cyprians that we have; and if I did not look at the bees at all, nor notice their nervous, irritable temperament, I should know at once that I had a colony of Cyprians or Syrians, because of the fact that the brood was filled clear out to the top and bottom-bars and to the end-bars. In fact, there were whole frames with solid masses of brood without any vacant corners, as will be found in the average frame of brood from an Italian queen. These solid frames seem to be very characteristic of the Eastern races of bees. The Italian bees, however, at least the leather-colored stock, reared as they are in southern Switzerland and northern Italy, have apparently learned by centuries of experience that the brood in the corners of the frames and the extreme edges of the hive is liable to be neglected. Whenever a cold night comes on, the cluster shrinks in a Langstroth hive something to the form of an oblong sphere—that is to say, it assumes the shape of an egg. Any brood that is left outside of this cluster is quite sure to be chilled. On the other hand, the Eastern races are bred in hot climates, and *their* centuries of environment have shown them that it is not necessary to “cut off the corners” in their brood-rearing. It therefore follows that the leather-colored Italian bees and the black bees are better prepared to stand the shock or extremes of



AN EVERY-DAY AFFAIR AT MEDINA.

weather or temperature night or day during the summer time. Experience also shows that they are better for a temperate climate than the Eastern races. On the other hand we find a tendency on the part of bee-keepers in our tropical climates to favor the extra-yellow bees, or bees with a sprinkling of Eastern blood.

CHARACTERISTICS OF A NORMAL COMB.

A further examination of this comb will show that every capping to each cell of brood is convex. While not so much so as we find in the case of drone brood, yet in every case of normal-worker brood there is a fullness about the cappings that shows a normal condition. Now let us look for a moment at a comb that has, perhaps, one or two cells of foul brood, or at least that is all we can find. You will discover that many cells are slightly flattened. On looking into them we find nothing specially wrong. Possibly a little later these same cells will develop real foul brood, either the American or European.

In a word, there is a sort of something in the appearance of a normal frame of brood that shows that there is no trace of disease in it. An experienced foul-brood inspector, as he glances over a frame of brood, knows whether that colony is probably healthy or has a stray cell of dead matter *somewhere* in one of the combs. It is impossible to describe just the exact difference between a normal frame of brood and one that has a large amount of healthy brood and some brood that is liable to show, later on, infection.

QUEEN-CELL WORK AT MEDINA.

The next engraving shows what we see every day in one of our queen-rearing yards where we are raising cells off from the wooden cell-bases. These cells are raised in extra-powerful colonies; indeed, our cell-builders are the ones that give us the most trou-

ble from swarming. We are obliged to keep them up to the swarming-pitch; and if no honey is coming in they are fed daily a little. This is absolutely necessary in order to get the larvæ in the cells lavishly fed; for it is very important that these baby queens have the very best care and attention in the early stages of their growth. The average visitor can go through any of our queen-rearing yards, and at almost any time an attendant in charge will pick up, quite at random, out of one of these hives a cell-building bar and find cells built out as nicely and evenly as this. Occasionally there will be a miss, but those misses are rather the exception than the rule now.

THE DISEASE SITUATION IN CALIFORNIA.

No One Race Immune.

BY J. T. DUNN.

The condition of the bees in the San Joaquin Valley is not as we would like to have it. European foul brood has done much damage in some apiaries; three-fourths of the colonies have had the disease; but the actual loss of colonies is very small, as many of them are now in condition for the alfalfa flow, which has just begun. Requeening has done much to check this disease in this county, but under certain conditions colonies with young queens develop the disease.

So far as I have experimented with the disease, race has very little to do with it. I have used all imported queens to breed from, of the following races: Three-band Italians, Caucasians, and Carniolans. If the colonies are strong in young bees, and if virgins are used, I have never had a case develop. On the other hand, if colonies are weak in bees I find it better to unite enough

of them to make one strong colony before giving them a virgin.

Fresno, Cal., May 31.

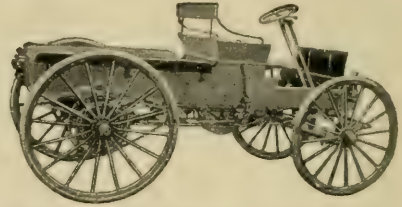
AUTOMOBILES AND MOTOR CYCLES FOR OUT-APIARY WORK.

A Combination of Livery Rigs and Motor Cycles the Cheapest for the Average Apiarist.

BY E. R. ROOT.

Some little time ago I promised to have something more to say on this subject; but I have been deferring doing so for the time being that I might look into the matter a little further. In the mean time I have been testing out motor cycles. Several of our correspondents of late have mentioned the value of this vehicle as an easy and rapid means in carrying a man to and from the outyards. We accordingly purchased a Yale, which is a light powerful machine, and especially adapted for hill-climbing and for rough roads. It is not quite so speedy as some of the other machines; but for our purpose, at least, in view of some of our long hills we thought it better to have a machine especially adapted for grades. For the year 1910, at least, we decided to use a motor cycle rather than purchase a four-wheeled automobile wagon with solid tires and high wheels, costing in the neighborhood of \$700 or \$800. If we would consider interest and depreciation on a proposition of this kind the amount would hire a livery for every day for two months. In the matter of outyard transportation, if one plans rightly it will not be necessary for him to carry a load to or from the yard more than once or twice a week. In the meantime a man must go to an outyard at

limit of investment of a motor cycle. If we allow for ten per cent depreciation and six per cent for interest, this will amount to \$32.00 a year. Then, moreover, there is only one pair of tires to take care of, and the tires cost less than half what a single tire would cost for an automobile, and there

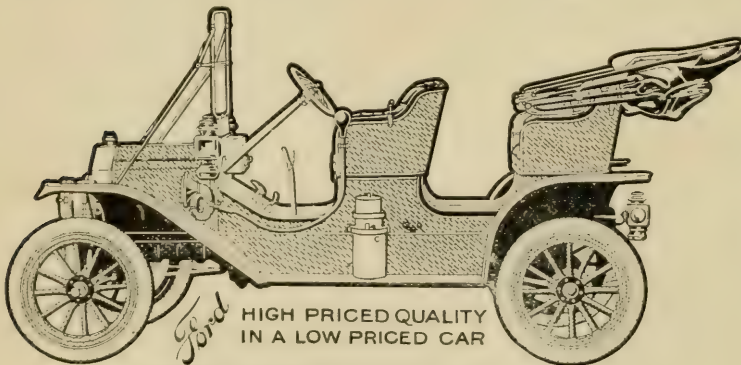


International Harvester auto wagon with high wheels and solid tires. Well adapted for running on bad roads or in the mud.

are only half as many of them. Whether we run an automobile or a motor cycle the up-keep on the tires and replacement will be the principal items of expense. Gasoline and oil are insignificant items. A good motor cycle ought to go from 75 to 100 miles on a single gallon of gasoline; and at a moderate speed to and from the yards of, say, fifteen miles per hour, one can practically bring every outyard into one location. Now, then, if the stuff is hauled by a livery to and from outyards once or twice a week the motor cycle will take care of all the other visits at far less cost than can possibly be handled by keeping a horse and wagon. If one has his own rig, that is, horse and wagon, there are some six months of the year when the horse is eating his head off, that is to say, there is a fixed expense going right on, while with a motor cycle there is no loss but depreciation. On the basis of 10 per cent for six months this would be only \$10.

Taking every thing into consideration, I have come to the conclusion that the average bee-keeper, if he lives in town, can hire a livery for hauling his loads, and use a motor cycle, which he purchases outright, in going to his yards, at far less expense than he can own a horse and buggy or an automobile wagon.

If one were very extensively engaged in keeping bees, and had a series of eight or ten yards, then an automobile wagon and a motor cycle also would come in good play. Both would more than pay for the interest and depreciation on the investment; but if one owns only about three or four yards, the motor cycle will do practically 90 per cent of the work of transpor-



Ford four-passenger pneumatic tired automobile.

least once a day in the height of the season, especially if there be danger of swarming. With a motor cycle he can take in the rounds of three or four yards in just a few hours. A machine such as the Yale can be bought for \$200. There are some higher-priced machines, but no better, as the added price only adds to the speed of the machine, so that we may consider that \$200 is the

HIGH PRICED QUALITY
IN A LOW PRICED CAR

tation, and in much less time than a horse and buggy, and at only a fraction of the expense.

"But," the reader will say, "how about bad roads in the spring when the mud is bad?" Use the livery, of course. A motor cycle will not run in the mud; but a high-wheeled auto buggy will negotiate mud about as well as a horse and buggy.

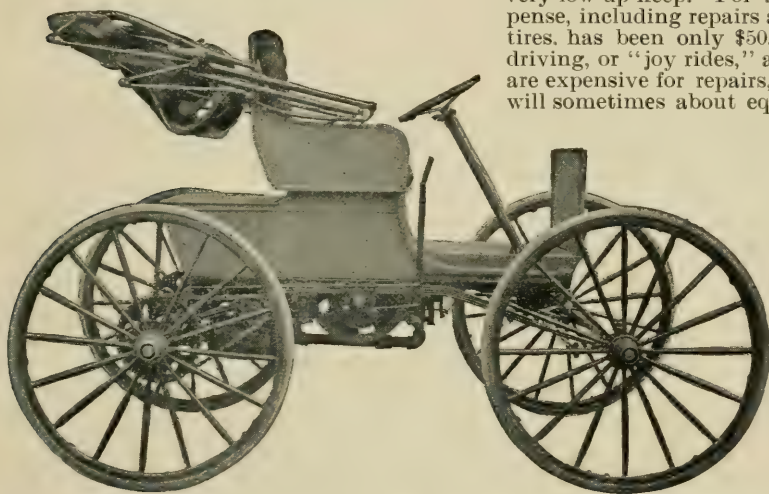
There are two or three auto buggies, with high wheels and solid tires, that can be bought at about \$700. If one wishes to combine business and pleasure, particularly if he wishes to take a man with him to and from the yards, then an auto buggy would be better than a motor cycle, although one can carry an extra man behind by putting on what is called the tandem seat. In this connection one can carry considerable light luggage by having a luggage-carrier on the rear or just back of the saddle. After one becomes expert he could probably carry two or three empty hives filled with frames of foundation or an equal bulk of supers containing sections and foundation; but I would

use, or the little four-cylinder Ford, capable of carrying four or five passengers, about as reliable outfits as he can purchase. If one wishes a more luxurious riding machine and can afford to pay a little more let him get a 4-cylinder Reo at \$1250, or a 4-cylinder Overland at the same price. I happen to know that the Overland is a first-class machine and a splendid hill-climber. I am not sure but that I shall get one when I get a new machine. A full-page advertisement of it will be found elsewhere. These machines are made in immense factories so that the cost of production is reduced.

The chief cost in the way of maintenance of an automobile is the pneumatic tires. On a Ford a new set would cost somewhere in the neighborhood of \$125. By careful driving they will run two years, but for fast and reckless driving they would not last a year. I make tires last about two years, and sometimes more. I rarely drive faster than fifteen miles an hour, and much of the time slower than that. As a natural consequence my two-cylinder Reo, listing at \$1000, has a very low up-keep. For three years this expense, including repairs and replacement of tires, has been only \$50.00 per year. Fast driving, or "joy rides," as they are called, are expensive for repairs, and replacements will sometimes about equal the cost of the

machine in a single year. There is no earthly excuse for fast driving, and people will be killed by the score until our laws are better enforced.

Where roads are bad and ruts are deep, and there is need of clearance under the axletree, we would advise the use of solid tires and high



Auto Buggy made by the Auto Bug Co. This machine is well adapted for running in the mud.

not advise any one on the first few trips to try to carry any luggage, because he may have a bad spill. In any event, the foundation must be very securely fastened, for riding on a motor cycle is a good deal like riding on horseback. There is considerable jolting; and while the rider can ease up at the bumps, because he can stand on the pedals the same as he does on an ordinary bicycle, the luggage in the rear has to take the full force of all the jolts.

Now let us go back to the consideration of four-wheeled vehicles. If the roads are fairly good, and one wishes to do some touring and combine business and pleasure, I would advise getting a pneumatic-tired outfit. If he feels that he can not afford the more expensive machines he will find the two-cylinder five-passenger Reo, such as we

wheels. They are not as easy on the machine and the engine; but with careful driving there is no reason why the running gear should not give good service. If one wishes to drive in muddy roads and good roads all the year, the high wheels and solid tires are a long way ahead of the low-wheeled pneumatic tires. In this connection I wish to make it very clear that pneumatic tires, even though they have chains on, are not adapted for running in the mud. If I get caught in a storm and *have* to drive in the mud I do it, but I do not like the job. On the other hand, from some tests that I have made and seen; the high-wheeled solid tires will run in the mud almost as well as a horse and buggy. Such machines come nearer being all the year-round machines than the other type. If one has macadamiz-

ed roads and brick pavement I would by all means have a pneumatic-tired outfit.

As a general rule, pneumatic-tired machines are better built than those sent out with high wheels. Most of the concerns engaged in the manufacture of the buggy-type high-wheeled outfits are small. There is one marked exception, however, and that is in the case of the International Harvesting Company, of Akron, Ohio. These people turn out annually something like five thousand machines, and they are sold all over the United States. One of their wagons is shown in the small illustration. Another machine, sold by the Auto Bug Company, of Norwalk, Ohio, seems to be well designed and well built.

A POULTRY-HOUSE FOR FLORIDA AND OTHER SOUTHERN LOCALITIES.

BY A. I. ROOT.

In our issue for July 1, page 433, a writer suggests that poultry-houses in their region are constructed without roofs so that the rains may drown the fleas, etc. Now, I am well aware that the stick-tight fleas are worse in the dry sand under any sort of roof; but, notwithstanding, I am not yet ready to decide that nothing is needed to protect any part of the poultry-house from rain. For two years my fowls all roosted in evergreen trees; and while it is true, as a general thing, they suffered little inconvenience, there are occasional cold storms when I think they need shelter. On one occasion my flock of Leghorns, rooster and all, came up to our woodhouse door and almost begged to be permitted to go in out of a cold northeast storm. As I had no shelter prepared for them I drove them back and made them stay out in the wet; but the egg-yield fell off quite a little in consequence. After that I went to work and made some poultry-houses. The picture adjoining shows one.

This house is constructed much like the brooder-house described on page 189, March 15. The sills are 2×4; and in order to keep out rats and every thing else a strip of inch-mesh netting, one foot wide, is tacked to the sills and let down in the ground all around. The sills are supported on half-bricks, to keep them a little way from the ground and have the house stand square

and level. All the rest of the frame, including rafters, is made of 1×3-inch lumber, planed. Well, the corners of the building are nailed together V-shape, as you will notice. Right under the eaves a V-shaped trough is nailed against the end of the rafters and on the under side. This is not to catch the rain water, for the shingles project beyond it; but it was put on to give strength to the building, and it forms a very neat receptacle for hammer and nails and all kinds of tools or any thing needed in the poultry-house. The shingles are nailed on to the ribs, which, as you will notice, are made of this same 1×3 stuff. The buildings are all 8 feet wide, and some of them are 12, some 14, and some 16 feet long, according to the number of fowls. The one in the cut is 14 feet long. A partition of poultry-netting divides the buildings in the center; then there are three poultry-netting doors all just alike. They are hung with spring hinges, such as are used on screen-doors. When the doors are all hooked open, there is a full passage clear through; but every night after the chickens have gone to roost the doors are all closed. This was done after the loss of thirty or forty small chickens from skunks and opossums. The south side is all covered with netting, as you will notice. The lower strips are of inch-mesh netting; the one above, two-inch, and the same inch clear around the building. The building is just high enough so I can walk through it without touching my cap. The north side is a little longer than



A POULTRY-HOUSE FOR SOUTHERN FLORIDA, ACCORDING TO A. I. ROOT'S IDEAS.

the south side, and comes down a little lower. Three roost-poles are on the north side.

So far I have never found any thing better for nests than a common cheap flour-barrel. These barrels are secured with wire

to the partition just above the roosts. I very much prefer having the barrels up about three feet from the ground, because it renders unnecessary so much stooping over to get the eggs; and when you, my friends, get to be seventy years old you will be glad to have things so arranged that you can avoid stooping. One nest-barrel will accommodate twelve or fifteen hens. If you have more than that number you get two barrels, one above the other.

I have before explained that we keep the premises sweet and clean by raking over the droppings as soon as the fowls are out in the morning.

All feeding is done in galvanized tubs hung by wires just high enough so rats can not gain access. There is another thing I like about these tubs. When you purchase a quantity of grain or any poultry feed, throw in a certain quantity, and after the chickens have picked out all they want you can readily see how much refuse or waste your feed contains. One of these compartments, 7×8 feet, will accommodate fifteen or twenty laying hens very nicely, or forty to fifty half-grown chickens. Each building is in the center of a yard containing from one-eighth to one-fourth of an acre.

The shingles, as you will notice, are set about two inches apart. They shed rain just as well this way, and I think they last longer, because they dry out so much quicker, besides saving expense. The building in the cut was not quite finished when the picture was taken. I afterward found some of my enterprising pullets would get up in the gable to roost. Another thing, when I wanted to catch certain fowls, unless the gable opening was closed with netting or otherwise they would get away through the opening. And I must not omit telling you I placed some poultry-netting around those nest-barrels to keep the chickens from roosting on them;* and if you do not look out your chickens will be going *into* the barrel to roost, soiling the nest-eggs and nesting material. To prevent this we have a gate made of poultry-netting to close the open end of the barrel. When you open the doors in the morning, be sure to open the barrels so as to let in the laying hens. When you gather the eggs at night, close all the barrels. You *can* let the sitting hens hatch chickens in one of these barrels, but a very

much better way is to have a similar building for sitting hens and nothing else. If you use barrels and nothing else for nests you can take a hen out of one barrel and put her into another (even from another building), and she will be very likely to settle down contentedly.

Now, if you do not like my Florida house I shall be very glad to have you send me some criticisms. Of course, such buildings will be all right for the summer time, here in the North; and I think they will be ever so much nicer and healthier than some already in use. Do you suggest there is too much draft? Well, I am satisfied that what draft there is in such a building in Florida, either for people or chickens, will never do any harm. When there happens to be a cold wind, so severe that chickens evidently wish to be sheltered from it, they find such shelter under the roosts; and that is why I boarded up the north side and a part of the east and west sides. This boarding-up is done with cull flooring which, as I have before explained, we get for only \$12.00 per 1000 feet. I do not know just what such a structure costs. It depends on what you have to pay for the lumber, poultry-netting, and carpenter work.

Perhaps I may tell you the building in the picture was built almost entirely by my colored man Wesley, and I paid him only \$1.50 a day. I helped him to build two or three, gave him some instructions in regard to the use of carpenter tools, etc., and after that he built, almost entirely alone, the one you see in the picture.

LARGE VERSUS SMALL HIVE-ENTRANCES.

The Large Entrances Mean Greater Quantity and Better Quality of Honey in the South.

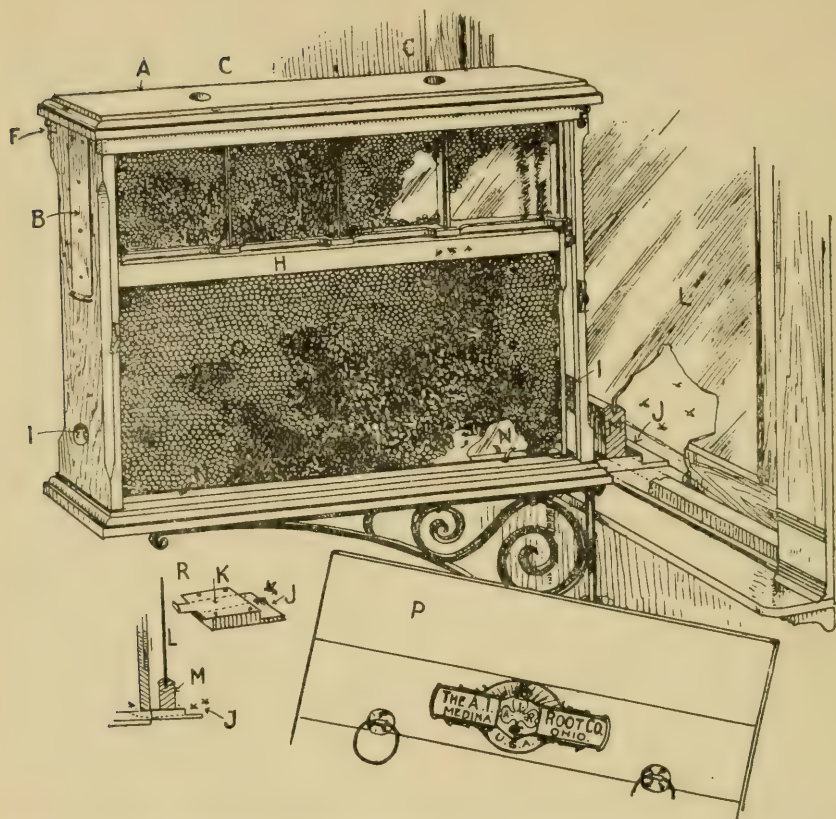
BY J. J. WILDER.

The appearance, body, flavor, and quantity of honey are affected to some extent by the ventilation it receives. Watery or greasy capped honey and thin honey, which soon ferments, generally come from the most populous colonies with small shallow entrances, especially in locations where the honey-flow comes in mid-summer or in settled weather with a high temperature. At least this has been my experience, and I have adopted an entrance $1\frac{3}{4}$ inches across the front of the hives and $1\frac{1}{4}$ across the back so as to give a current under the frames.

This is done by placing $1\frac{1}{4}$ -inch strips the length of the hives under them on the regular bottoms as soon as the main honey-flow is on, leaving them under until winter. Bees will store more honey above such bottoms, and it is of much better quality. Also the comb is drier, and the honey retains its whiteness much longer.

If comb honey is set where the temperature is high, and where there is no current of air, the capping will soon appear brownish; and if the honey is the least thin it

* Right here let me remark that, if you want your poultry-house to be always neat and tidy, and a place where you can invite your lady friends if you choose, you must have the whole inside so arranged that the fowls can not possibly let their droppings fall anywhere except on the soft sandy floor. To do this, every bit of furniture inside, except the roof, must be so that no hen can possibly find a standing-place on top of it. My nest-barrels soon got to be very untidy-looking until I took some cheap netting and ran it from the barrel up to the roof or nearly there. Sometimes, of course, there will occasionally be a few droppings on the roost-poles; but the one who rakes over the sand early in the morning can very quickly cleanse all such places with a handful of the dry sand. My impression is that stick-tight fleas can be kept out of this dry sand on the floor by occasionally spraying with carbolineum or some similar substance. My brother is now making experiments along this line.



Single-comb observatory hive with side panels removed, showing the sections above the brood-frames.

will begin to ferment, and soon the capping will appear watery or greasy. About the same condition prevails while it is in the hive. From experience I am led to believe that air is more essential in the hive than the average bee-keeper apprehends, especially in localities where the main honey-flow comes in settled warm weather.

When I first began bee-keeping I used very small entrances, and my bees would store only a few pounds of honey from the cotton-plant. It would ferment in the comb as fast as they stored it. It would all be sour by the time the flow ceased, and about half of it capped, which would have a watery appearance. Since I have adopted large entrances, allowing a current of air to pass, my yield from the cotton-plant is far greater, and the honey is thick and very wholesome, and the cappings are light and very dry. I contracted the entrances of a few hives this season, and found that the same conditions prevailed as in former years.

A bee-keeper near one of my apiaries from which I always get a good crop of honey has 25 colonies, and does not get enough honey for his own use. The only way this

can be accounted for is that he has very small entrances.

Large entrances with a current of air passing under the frames check loafing as well as swarming to some extent, and overheated brood and other difficulties which we bee-keepers have to contend with in these low, damp, hot sections are done away with.

Cordele, Ga.

EXHIBITING BEES AT FAIRS.

BY H. H. ROOT.

Within the last few years exhibitors have learned that live bees create more interest at a fair than almost any other one thing. Too often, however, the bees are not displayed to the best advantage. If a colony is placed in an ordinary-sized hive, having glass sides, very little can be learned of the bees and their habits on account of the fact that the visible parts of the outside combs are not at all representative of the combs inside. Furthermore, the few bees on the outside are generally running around trying to get out and acting more or less demoralized.

ent should attend this meeting. Particulars as to the date, program, etc., will be announced later. Watch the bee-papers for it.

The membership of the National to-day (June 18) is 3885. It will be more than 4000 by the time of the National meeting. There are a few who should renew now; but after the honey-harvest all will attend to that, surely.

Many report that their bees are doing well. To-day we began extracting, and with four machines and steam-knives we took off a ton of honey. My son, who does all the uncapping, says that, of all the several methods of uncapping honey, he prefers the steam-heated knife.

If any member of the National wants a copy of my State Inspector's Annual Report for Wisconsin, and will write me for it, I will gladly mail a copy of it.

A renewal of membership was just received from a bee-keeper who has kept bees the greatest number of years continuously—88 years, I believe. The member is John Cline, of Darlington, Wis. The "boys" stay with us.

The number of copies of the last Annual Report of the National are getting low; but so long as any are left I will mail a copy

to each new member. Also, for 4 cents for postage on each copy I will mail to any one other back numbers of Reports, as there are a few of them still left.

The program of the next meeting of the National Association is being prepared. It promises to be one of the best meetings the National has held in many years. If the honey crop should prove to be a good one between now and that time, the attendance ought to be a record-breaker.

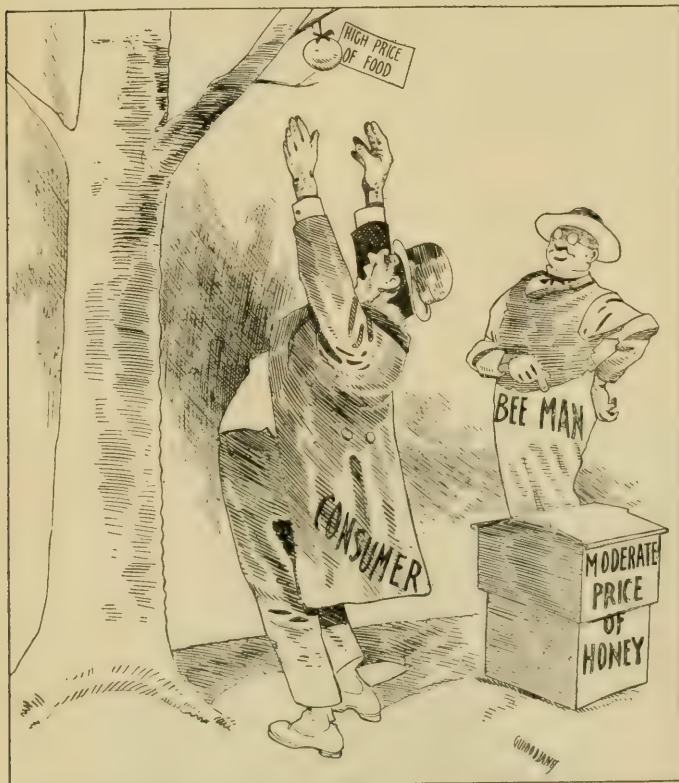
A bee-keeper sent his National dues, claiming he wanted help at once, as his swarms lit on his neighbor's apple-trees, and the neighbor, with a revolver, said he would shoot trespassers. He claimed the bees ruined his apples and sucked the juice from his onions! How is that for charges?

Platteville, Wis.

A PATENTED FOUNDATION WITH A REINFORCING OF CLOTH IN THE BASE.

BY INVENTOR.

I am pleased to be able to say to you that I have just received notice that my claims for improvement in honey-comb foundation have been allowed, as you will see by the letter of my attorney, which I inclose for your information. It seems to me that the device is fully covered in the "claim" quoted by Mr. Hough. I wish you would try it out under your own observation, so that you may be fully informed and satisfied as to its merits. Until very lately I fully believed that any sort of swarm, in any condition, would accept the reinforced foundation as readily as they would take to a natural comb-starter; but a little time ago I proposed to shake a swarm to prevent swarming. On getting busy with them I found that they had cast a swarm the day before; but I shook the hive out on to empty combs, except one comb of brood, and, very unadvisedly, put in a frame with a reinforced starter (7x7). It was unadvisedly done, as there were not bees enough to cover properly one-third of the other frames, and almost no honey coming in. (I will say



HONEY HASN'T DOUBLED IN PRICE; WHY DON'T YOU EAT MORE OF IT?

here, that, where I am, after a little flow in March and April, there is very little honey-flow—honey flowers—till the sumac bloom). As I have had bees in fully as good condition cut out an all-wax foundation I really attach but little importance to that experience of non-acceptance of that sheet, except it has suggested to me the probable or possible desirability of using my device in full sheets in divided or two-part frames; also the fabric, if cloth, should be of the lightest and hard-spun thread. It may well be that a tough paper of manilla tissue would be preferable to woven fabric. Paper tissue I have never tried; but I have used a frame filled with a wax-saturated cloth, plain, with no cell-markings, with the most perfect success—so far as its *acceptability* went; but you may well imagine that the cell formation looked as though there had been a diminutive earthquake, as each bee seemed to begin just where it happened to be, and without regard to the work of the others.

I believe you will find this device one of the greatest helps in the brood-nest and in the extracting-supers brought out in many years.

[We have noted carefully all you say in reference to your invention. This is a very old idea, worked out and used by A. I. Root some thirty-five years ago. He made and sold it, but had to abandon it because the bees sooner or later would gnaw down the combs that were made on it. The same idea has also been patented in one form and another by other people, notably by one party in Cuba, who recently obtained a United States patent. Your claim is limited to the use of a "permeable reinforcing fabric medium," and, as such, is very limited and narrow. We doubt if the patent would ever be worth any thing to you, because if there had been any thing in the idea we would have used it many years ago. The thing has been invented over and over again, and in every case, so far as we know, has had to be abandoned. Foundation made of cloth makes beautiful combs to start with. The product, when drawn out into combs, looks all right; but you will find more trouble just exactly like what you describe. It is easy enough to make such foundation, but the two objections to it are, first, the expense of the fabric; and, second, the fact that the bees are hostile to any thing like fiber. In the dull season they are apt to gnaw down the combs, as they will do sometimes, until they are in shreds. Sometimes combs of this kind from reinforced foundation will run for two or three years.]

We do not like to throw cold water upon your proposition or invention, but think it is only fair to give you our experience. In view of the citations and the write-ups that were made of this very product years ago in the back volumes of the bee-journals, your patent would be of little or no value.—ED.]

SIZE OF HIVES.

The Eight-frame, Formerly Considered the Best,
Now Giving Way to the Ten-frame; A. I.
Root's Opinion on the Subject.

BY BARRETT PIERSON.

It is interesting to read the discussions upon the merits of the ten-frame hive as against the eight-frame. The editor has put himself upon record, page 338, June 1, as being in favor of the ten-frame, and Dr. Miller seems inclined that way also.

I quote the following from page 145 of the A B C of Bee Culture, 1891 edition, which I think was the last edition entirely written by A. I. Root. "The eight-frame L. hive is now generally conceded to be the best working size; and it is plenty large for general purposes. The queen will seldom lay in more than eight frames in the brood-nest. If her brooding capacity extends beyond this, unless she is restrained she will go into the top story. In the ten-frame hive, Italians especially will fill eight frames with brood, and the two outside ones with honey, and this quantity of stores is apt to make them quite loath to enter the super. If the lower eight frames are filled with brood just at the beginning of harvest, and there are no more frames below, just as soon as the flow of nectar begins the bees are obliged to put it where we want it—that is, in the upper story."

There are few bee-keepers who have observed the habits of bees closer, or devised more articles to meet their needs, than A. I. Root, and the above shows that the eight-frame hive was the right size in 1891.

Prof. Beal, of the Michigan Agricultural College, once said that farmers had unconsciously improved corn by always selecting the best ears for seed. As bee-keepers and queen-breeders have always selected the best queens in their yards for breeders, the bees of to-day are better, and the queens are more prolific than those of 1891.

In almost all apiaries there are some queens whose needs an eight-frame hive would better meet than a ten-frame; but as the demand for supplies shows that the ten-frame has the preference, it follows that the bee-keepers believe it is better to use eight-frames in a ten-frame hive for the poor queens than to crowd the more prolific queens in the eight-frame hive.

Flint, Mich.

[The paragraph in the old 1891 edition of the A B C of Bee Culture, which you credit to A. I. Root, was written by E. R. Root. The logic of the times and the experience of hundreds of bee-keepers, the tendency of the bee-keeping public to change from eight to ten frame hives, and our own personal experience, led us to believe that ten-frame hives are better than the eight-frame. If a queen can not quite fill ten it is a very easy matter to reduce ten down to eight-frame capacity; but it is not so easy to add two ex-

tra frames to the smaller hive. Taking it all in all, we are frank to admit that hard stubborn facts have changed our views on this subject in the last eighteen or nineteen years.

A. I. Root himself never expressed any opinion on the eight-frame hive any more than to say that when we first introduced it twenty years ago he thought it was a mistake. He believed father Langstroth was about right when he fixed the ten-frame size as the right capacity for the average colony under average conditions. A. I. Root himself has never changed from that position. In the early editions of the A B C he recommended the ten-frame hives. We began our work of revising the A B C in 1887. —ED.]

BEES OF AFRICA.

A Newly Published Work.

BY BURTON N. GATES.

In a monograph entitled "Die Bienen Afrikas nach dem Stande unserer heutigen Kenntnisse,"* by Dr. H. Friese, the noted European authority on bees, is presented, according to a review of the work by Prof. W. M. Wheeler, in *Science*, Vol. 31, No. 798, pp. 580-582 (April 15, 1910), "practically all that is known concerning the Ethiopian apifauna."

"In all, 777 species of bees are enumerated . . . The introductory part of the work will interest the student of geographical distribution, since it contains a number of maps showing the ranges of some of the more characteristic genera of bees, both in Africa and other parts of the world."

According to the data presented, it is of interest to biologists to note, as Professor Wheeler points out, "that the Ethiopian region, though it may actually possess as many as 1000 to 1200 species of bees, according to Friese's estimate, has a much poorer apifauna than Europe. This bears out the author's statement that bees are not really tropical insects, but have their optimum area of specialization in the north temperate zone." There must have been, then, during geologic time, a migration into the tropics.

Concerning the social bees of the Ethiopian region, there are "29 species of *Trigona*, the honey-bee, and four of its sub-species and varieties (*Apis mellifica*; *A. unicolor-andersoni*, *unicolor-intermissa*, *unicolor-freisei*, and the typical *unicolor*). The bumblebees (*Bombus*) are absent from the Ethiopian region, though they are known to occur in tropical South America.

College Park, Md.

*Zoologische und anthropologische Ergebnisse einer Forschungsreise im westlichen und centralen süd Afrika ausgeführt in den Jahren 1903-1905, mit Unterstützung der kgl. Preuss. Akad. d. Wiss. zu Berlin von Dr. Leonhard Schultze. 2 vols.; 475 pp.; 2 pl., 19 charts, and one text figure. Jena: Gustav Fischer, 1909.

LIFTING MADE EASY.

How the Hard Work in Connection with Managing an Apiary May be Simplified.

BY HARRY LATHROP.

Miss Candler tells us, in *Bee-keepers' Review* for January, that "it seems a surprise to some people to find a woman who is a bee-keeper," and that it surprises her that they should take that view of it. In the course of her excellent article she discloses the reason why people look at bee-keeping as a work not exactly suited to women. She says she has worked too hard at times, and that lifting is the hardest part of bee-work for women.

I don't believe that being a woman necessarily involves physical weakness; but it is a fact that the average woman is not as strong as the average man. There is, however, such a thing as making up for the lack of physical strength by intelligence, by taking advantage of every situation that calls for physical exertion, and by using it as an aid to greater efficiency.

It was my fortune (or misfortune) to be built on the rather light order. My usual weight, in good health and ordinary dress, is 135 pounds. All my life since boyhood I have had something to do with lines of work that required lifting and handling heavy things. I began, when 18 years of age, to run a one-horse dray in a village. In this service I delivered trunks to upper rooms, helped carry cook-stoves upstairs and down, and delivered barrels of syrup and heavy packing-cases to the stores. Being light in weight I soon learned how to take hold of things so as to handle them easily and avoid straining myself.

After the dray business I have had years of handling freight and baggage at different railroad stations. In all my draying experience I was never hurt except once, and that was when a friend helped me to unload a cask of syrup in front of a store. In some manner one of my toes got under the edge of the barrel and was crushed. If my friend had allowed me to handle the article alone I would not have received the injury.

I always wanted to take a course of physical training in a gymnasium; but having no opportunity to do so I conceived the idea of using my daily work as a sort of gymnasium training. The plan worked well. There is an immense power in mind—the will—the mental attitude we assume toward a task. Go into the gymnasium and see how the skillful athlete takes hold of his work. The lifting of heavy weights or other difficult feats of strength is a joy to him, because he goes at it in the right way. So when I have to lift or move a heavy object I consider that I am in my gymnasium, and that the doing of the task in the right way is to train and benefit me.

There are certain rules to be observed. Whenever you take hold to lift, always lift on a full breath. Fill your lungs as full of

air as you possibly can, and hold it while making the tug. Look well to your footing; see that your feet are planted squarely; or if you are to walk with a burden, see that the path is clear to avoid stumbling. If you are not certain of your path, and can not watch it, slide your feet along and feel the way. In this way I have carried heavy hives down hill in the dark and never a stumble. Always keep balanced; think of the skill of the rope-walkers. They understand this balancing business to a finish, and there is a lot in it.

With me the work in the apiary has not been difficult. I lift every thing that it is necessary to lift. I carry the hives in and out of the cellar alone, and often carry in some double-deckers—that is, when wintering in two, eight, or ten frame bodies.

Last fall while duck-hunting I carried a 200-pound man across a shallow branch of the Wisconsin because I had rubber boots, and he feared to get wet feet. As the footing was quite firm I found it a very easy task compared with some lifts.

I am not trying to establish the fact that I can lift unusually heavy weights, but that I can do the lifting in the apiary without injuring myself or being compelled to say I did work that was too heavy for my strength.

There are tasks beyond my strength; and if I should take hold to lift the honey-house the effort would not hurt me, with my method of procedure. I would simply cease my effort to lift the object, and immediately begin to plan some other way to accomplish the purpose.

In addition to the directions given for lifting made easy, I would say, avoid nervous jerky motions. Avoid a wrong attitude of mind toward your work. Learn how to get real rest by entire relaxation of the muscular system. It requires only a few minutes to regain a feeling of buoyancy after a hard tug if one goes at it in the proper manner.

I hope that Miss Candler and many other lady bee-keepers may get hold of a useful hint or two from the foregoing. The thing that I wish to impress is that any one can work at bee-keeping without danger of strain or injury if he is careful to apply the principles I have sought to convey.

Bridgeport, Wis.

CANNING FRUIT WITH HONEY.

Can What You Can.

BY MRS. H. K. BEARD.

Read before the Pennsylvania State Bee-keepers' Association at their meeting last September.

There is no mystery or luck about the successful canning of fruit. If properly done, failure is almost out of the question. The fruits or vegetables should be barely ripe, never over-ripe, perfect of their kind, or at least with no fermentation started in them, and the sooner they are taken from tree or garden and sealed up in jars the better. New fruit-jars are best put over the fire in

cold water to cover them, brought slowly to a boil, and slowly cooled; then they will stand greater extremes of heat and cold.

If particular about keeping the fruit in shape, or where a large amount is to be done at once, it is usually put uncooked into the jars and covered with the honey. The jars are then set into a larger boiler with a perforated rest under them to keep them from the bottom. Fill the boiler with cold water nearly to the shoulders of the jars. Screw the tops on rather loosely; put the cover on the boiler and bring to a boil. Both fruit and vegetables can be done up in this way. As a rule the latter is more difficult to keep than fruit, and require much longer cooking.

Twelve quarts of raspberries require two quarts of honey. Put two quarts of the fruit in the preserving-kettle and heat slowly on the stove. Crush the berries with a wooden vegetable-masher and spread a square of cheese-cloth over a bowl and turn the crushed berries and juice into it. Press out the juice and turn it into the preserving-kettle. Add two quarts of honey and put it on the stove. When the syrup begins to boil, add the remaining ten quarts of berries. Let them heat slowly. Boil ten minutes, counting from the time they begin to bubble. Skim well while boiling. Put in cans and seal.

Of cherries, take six quarts, $1\frac{1}{2}$ quarts of honey. Measure the cherries after the stones have been removed. Pit them or not, as you please. If you pit them, be careful to save all the juice. Put the honey in the preserving-kettle over the fire until it simmers. Put in the cherries and heat slowly to the boiling-point. Boil ten minutes, skimming carefully.

Of pears, plums, and peaches, you take the weight of the fruit in honey. Plums should boil about fifteen minutes; peaches and pears, from twenty to thirty.

Blackberries are put up same as raspberries.

Of strawberries, take four quarts of fruit and $1\frac{1}{2}$ quarts of honey. Boil ten minutes. From the time it begins to boil, skim well.

Of rhubarb, take equal weight of fruit and honey. Boil ten minutes.

Of apples, take two quarts of fruit and one pint of honey and half a pint of water. Boil twenty minutes.

Of corn, take two quarts, cut off the ear; half a pint of honey, one pint of water, four even tablespoonfuls of salt; boil twenty or thirty minutes, then put into jars or bottles.

Of tomatoes, take three quarts, one pint of honey, three tablespoonfuls of salt; boil the same as corn.

Of corn and tomatoes, take two quarts of corn, two quarts of tomatoes, one and a half pints of honey, half a pint of water, five even tablespoonfuls of salt; boil thirty minutes, then seal.

Grape, raspberry, blackberry, cherry, plum, and peach juices are made as follows: One quart of juice, one pint of honey; boil from ten to twenty minutes.

VENTILATION AT THE ENTRANCE TO PREVENT SWARMING A MATTER OF LOCALITY.

BY ALFRED L. HARTL.

On page 691, Nov. 15, 1909, Dr. Miller discusses ventilation to prevent swarming, and the editor calls for reports. For the first few seasons I gave every colony an entrance $\frac{3}{8}$ inch by the width of the hive. I had always been a believer in plenty of fresh air, and I certainly did not want my bees to suffer from a lack of it; but experiment and observation soon convinced me that so much ventilation was too much of a good thing. I have since concluded that $\frac{3}{8}$ by the width of the hive is the best. I know that many will say that this will cause swarming and melted combs; but I tried this size of entrance side by side with a $\frac{1}{2}$, and the $\frac{3}{8}$ entrance has always given better results. I would not say that the $\frac{3}{8}$ entrance is large enough for all localities; but it certainly is for this locality, for the reason that our swarming season comes early in April, when the weather is not yet hot and the nights are cool. We are not bothered with swarming after the honey-flow is started in earnest, provided enough super and brood room is given.

My father has kept bees as long as I can remember, and he had them in common box hives, with a $\frac{1}{2}$ -inch hole bored in one end for an entrance. Nearly every colony always swarmed in April, because he did not put on supers early enough (he neglected his bees because of the stings), and in June the hives were always overflowing with bees again during the second mesquite and cotton flow; but no colony ever sent out another swarm. Now, does not this show that bees will not swarm on account of lack of ventilation? If ventilation were necessary to prevent swarming, these colonies certainly would have swarmed, having only the $\frac{1}{2}$ -inch round entrances.

Our hives face south and southwest the year round. We have hard south winds which force the air right into the hives, and I am positive that an entrance as large as Dr. Miller uses would result in very little surplus honey. With so large an entrance there is too much space for the wind to push in, and a large number of field-bees would have to stay in the hive to maintain the proper temperature. This would surely mean a smaller honey crop. It is true that, on very sultry days, some colonies will cluster out on the fronts of the hives, especially those that are crowded for super room; but by providing plenty of supers there is never very much clustering out.

It is my opinion that a $\frac{3}{8}$ -inch entrance would hardly be large enough in a locality where the swarming season begins with the main honey-flow and lasts until the flow is on the decline—during the hottest time of the whole year. This only goes to show that there can be no one standard entrance; for an entrance that is just right for one lo-

cality is sometimes wrong for another, and the only way to decide is to try the large and small together and make careful note of the results.

Elmendorf, Texas.

THE ORANGE-TREE OF CALIFORNIA.

Is It a Reliable Source of Nectar?

BY J. O. SHEARMAN.

The article by Mr. Powell, on page 709, Nov. 15, 1909, seems to me rather one-sided, as *locality* has much to do with the question, even if the word *is* worn out. I take it Mr. Powell lives near Riverside, where the ocean fogs do not hang on all the forenoon, as they did here near Pomona last season. And while the fog hangs on there is but little honey gathered. So through a larger part of the orange yield the bees did not do much in the forenoon in *this* locality, or at Corona, or between here and the coast. Near Riverside or San Bernardino the fogs do not last so long, and sometimes do not reach there at all when they do *here*.

We had just four days this last season when the weather conditions were ideal for honey, and then every thing seemed to be wet with it. Big colonies that were ready filled up in four days. Smaller ones stuffed their brood-combs with nectar, not thick honey. The teams, where they had to cultivate, were wet with nectar, and so were the harness, so my neighbors here told me, and so they told me four miles east of here. But that is not always the case.

After large tracts have been irrigated near an apiary the nectar will be thinner for a few days; and toward the end of the orange-flow, when weather is quite warm, the honey will be fit to extract the day after it is gathered—i. e., usually, but not always. In short, the orange-tree is a profuse yielder of nectar, and beats basswood about 30 days if the weather is just right.

I have said nothing so far about why beekeepers do not put enough bees near the orange-groves to gather all of that nectar that often goes to waste. First, they do not know when a phenomenal flow of honey will come, as such a flow does not always occur in every season, although every season yields some honey; and, generally, some time in the month or so that orange blooms freely, there is a time when it comes in quite freely for a few days—three or four may be, and then at times only in the afternoon. Then as to *locating* near orange-groves. In the best places, where orchards are close together, and no room between, the owners of the orchards will not allow a stand of bees to be on their land, and there is no room but the highways for miles at a time. Then, after the orange-flow is over, nothing comes in for several months, then only a dribble of dark honey, pepper, or hoarhound.

Pomona, Cal.

Heads of Grain

from Different Fields

The Need of Shade Depends upon the Weather and on the Time of the Honey-flow.

On p. 360, June 1, Mr. G. A. Barblisch, of La Crescent, Minn., gives his opinion regarding shaded hives. I feel confident I can explain why he obtained more honey from the shaded colonies. I had 60 colonies under observation in my yard during the season of 1909, several of which were shaded the greater part of each day, some during the noon hours, and about 40 colonies in the sun all day. Those in hives that were shaded (by apple-trees) stored practically as much honey as the others. It was an unlooked-for result, but can be explained by the peculiar weather conditions and the time of the honey-flow. We had a severe drought in this section during the entire honey season in 1909, and the best of the nectar was available to the bees during the ten days prior to July 3. During that period we had an extremely hot spell of weather, and the shaded bees were able to work; but those in the sun, even with shade-boards for protection, deserted the supers and clustered outside during the middle of the day. As La Crescent is only about fifty miles from this point the weather conditions and honey-flow were probably the same as here.

With the passing of each season I realize more fully the importance of observing carefully the peculiarities of the weather, and also the growth, appearance, and profusion of honey-bearing plants; and by working the bees to conform to those conditions we can greatly increase our crops of honey, and at the same time keep the bees in better shape.

IS IT BAD POLICY TO INTRODUCE A QUEEN TO A FULL COLONY?

I should be pleased to have the experience of the editor, as well as of others, concerning Mr. Alexander's rule, never to introduce a queen to a full colony. If in such cases they are superseded in a short time, why have we not heard of it before?

Chatfield, Minn., June 6.

J. J. KADLETZ.

[You are quite right in your opinion that the question of whether shade is detrimental to the bees or not depends upon conditions; but we may put it down as a general rule that excess of shade throughout the season is more often detrimental to colonies than too little of it. In very hot weather shade does no particular harm; but during the spring and early summer, especially on cool or chilly days when the sun shines, shade does more harm than good.

Mr. Alexander's experience has not been the same as our own. We have made it a practice for years to introduce queens to powerful colonies, and during all of that time have never seen any bad results follow. We are doing it so constantly, every day, that we are of the opinion that either Mr. Alexander's special locality or strain of bees must have been responsible for an experience that is so totally different from ours. So far as we can remember, no correspondent who has ever written has said any thing that would go to show that it is not advisable to introduce to a strong colony.—ED.]

Transferring.

I have a hive of bees located on a box; and to prevent a swarm from the colony escaping I clipped the wings of the queen. A little time ago a swarm emerged from the hive; but knowing that the queen could not go with the swarm I paid but little attention to hiving them. They finally returned, as I supposed, to the hive; but I have since found that they discovered some holes in the box under the hive, and the queen evidently must have gone in there, as there are now active operations in the box as well as in the hive above. In other words, the queen got the best of me in spite of her clipped wings. Now, how can I best get the colony out of the box? I have heard that a correspondent of GLEANINGS described a method adopted by him in getting bees in bee-trees to leave the trees and take up their abode in hives provided for them, even carrying the honey in, too, which they had previously stored in the trees. I have thought that per-

haps his method could be applied here, and that you could refer me to the issue of GLEANINGS detailing his method. If so I should be obliged for the information.

Lowville, N. Y., June 25.

R. B. HOUGH.

[While it is possible to get bees out of bee-trees without cutting the tree, yet we would advise going after the bees in the box in the good old-fashioned way; namely, blowing a little smoke into the entrance of the box, prying the side off, cutting out the combs, and fitting them into regular standard frames. If you do not like the messy job of cutting out the combs, drum two-thirds of the bees out into an empty box. Remove the box from which the bees have just been removed; then turn it half way around so that the entrance will point in the opposite direction, and then put a hive in the place where the box stood with the entrance facing the direction the box did. Dump the bees from the other box in front of it, then in 21 days drum out the remaining bees from the old box. If you succeeded in getting the queen at the first drive, cut out the combs and melt them up. This latter plan is known as the Heddon short way of transferring. In this particular case, however, you can, if you desire no increase, put the hive that was on top of the box down on the ground and let the first drive of bees run into it.—ED.]

A Good Plan for Coaxing Bees into Supers.

I am trying a plan to induce bees to start work in the supers. Some swarms seem to hesitate about going up to work. I have a lot of frames, made the same size and shape of the section-holders. I place supers full of these frames on my strongest colonies early in the season, let the bees draw out the foundation, start a little honey, then remove the supers, taking one frame, placing it in the middle of each of my section-supers, and placing that super on the colonies that are flying off. So far the plan has worked well. The smell of that fresh drawn comb and new honey seems to give the bees courage. While some are finishing the frame, others are at work in the sections near by. The frames of honey not needed for baits are valuable for fall feeding.

Theresa, N. Y.

B. J. WORSLEY.

[This plan is somewhat similar to the Townsend plan of producing comb and extracted honey in the same super, although, if we remember correctly, Mr. Townsend has one shallow frame at each side of all his comb-honey supers. We know that these ideas are practicable for the comb-honey producers because we have tried them.—ED.]

Does the Use of Fertilizer Prevent the Secretion of Nectar from Buckwheat?

Some people of this locality say that bees will not work on buckwheat on which commercial fertilizer has been used. Is this so? We intend to raise about 14 acres of buckwheat this year, which will be about half a mile from the hives. I put full sheets of foundation in my frames and wired them, but did not imbed the wires. Will the bees draw it out the same as usual?

Halcoff Center, N. Y.

CHAUNCEY E. KELLY.

[We never heard of such a thing as commercial fertilizer or fertilizer of any kind preventing a secretion of nectar from buckwheat, and we do not believe there is any thing in it. If any of our subscribers believe otherwise we should be pleased to hear from them.

The bees will draw out the foundation; but unless the wires are imbedded there is a possibility that the bees may gnaw around the wires.—ED.]

An Interesting Experiment; Blowing Bees off Combs.

Some time ago I put in an air-pump and tank to blow the bees off combs instead of brushing them. I tried several pressures, and at last ran the air-pump to 100 strokes a minute. I thought I had the plan down fine, so I hooked on a long hose, ran it out in the bee-yard, took out a comb loaded with bees, and turned on the air. The bees were all blown off slick and clean. Every thing worked finely so far as the bees were concerned; but I saw at once that I had a honey-extractor too. When the air was strong enough to blow the bees off, the current across the combs took all the uncapped honey out of the cells in a fine spray, blowing it

over the hive and grass. I tried it on several hives, but all the uncapped honey was wasted. The plan will not do in mid-summer, when there is more or less thin honey in the hives. I think it might get the bees off combs, since all cells would be sealed; but bee-escapes are cheaper and handier. Finally I took the apparatus down, adding one thing more to the junk-pile, but not until a lot of wind had been blown out of my head.

Mayfield, N. Y., April 24.

G. W. HAINES.

Twentieth-century Methods.

We know you are always on the lookout for new things, ideas, and methods in bee-dom. I have found something to-day that may please you, as his description is certainly complete.

Prairieville, Ala., Feb. 19.

W. D. NULL.

Editor Ruralist:—The following suggestions may be of some help to your readers. The best way to make a bee-gum is to have it 28 inches high and 10 by 12 inches inside, and make a partition 18 inches from the bottom, say 10 by 10, and leave a crack an inch wide so that the bees can pass through. Saw the back plank in two at the partition, and do not nail the head of it, for you want to keep that place in which to rob. Do not take off the head; and if the gum is not rich, tack the piece back, and do not break the honey, for that bothers the bees. When you rob, be sure not to break the comb loose below and let it fall. You can rob better at the side, and do not drive the bees. Just take off the bottom piece and rob below the partition, and they will stay, as they have honey above.

Hiving bees is an easy matter. Make a brush broom. Have it so the bees will not fall through, and rake off from the bottom until the bees begin to settle on the brush, and then shake or smoke them off the place they have settled on. Take them to the gum and place them on top; rake off a few into the gum, putting on the head, and then rake some off at the mouth of the gum, and they will soon go in without any raking off at all. All you will have to do is to shake them off the brush.

To take bees out of a tree, cut a pole long enough to reach up to them; tie a rope to the middle of the pole, and put it over a limb, fastening it so that you can press down on the end till the brush reaches the bees, and then take them off as I have mentioned, lowering the bees with a rope slowly. Hive a little more slowly, as they may want to go back. Always use fresh brush.

If a gum does not work, the queen is dead, and I put a new swarm in. They fight, but that does not make any difference; and when I put two small hives together they do better.

I have got as high as 60 lbs. of honey in one year from one gum. I rob till September, but I always leave part of the honey, and I rob any time they get rich.

Bees always come back when they get starved out, and they swarm here till September sometimes.

I have had bees twenty-one years, and I had the first ones to swarm and go in again this year, and this fall they came back and settled together, till there was half a gum full. I hived the 6th of October, and they are living yet.

Penn. Miss.

A. W. SHAW.

[Yes, this is indeed a complete description of a degenerated form of even box-hive methods. If our friend manages in this way after 21 years of experience we wonder what he did when he was a beginner.—ED.]

What Time of the Day is the Best to Form Nuclei?

At what time of day would you divide your bees—at noon, or when they are all in the hive late in the afternoon? Would some cloudy day be preferred? It seems to me that, in doing the work of dividing bees (that is, artificial swarming), during the sunshine the bees are out too much to insure success. How far advanced should the queen-cell be before attempting it? How long before it is uncapped? or at what stages of development of the queen-cell? I do not find these in any of your literature.

MRS. SUSAN E. ALLEN.

Wheelerville, Pa., June 7.

[It is usually a good time to form nuclei along during the middle hours of the day when the old bees are out of the hive. The bees that are then carried to another stand will be mainly young ones

that will stay where they are placed. At other times, or when bees are not flying briskly, take more bees over to the other stand than will be needed there, because some of them will return to the old hive.

In forming nuclei it does not make much difference what the stage of growth of the queen-cells is.—ED.]

Division-boards Made of Tin to Prevent the Bees from Propolizing Them Fast.

Very often, after the honey-flow, it is difficult, if not impossible, to remove ordinary wooden division-boards with followers from the hives. However, I have overcome the trouble, for I make mine of tin, and they have proved so satisfactory that I have made more and more of them in this way until I have equipped practically all of my hives.

I find one sheet of tin costing 15 cts. will make three division-boards. Cut the pieces as long as the length of the top-bar, and as wide as the frame is deep. Then fold the top of the tin down flat about $\frac{1}{8}$ inch from the edge. Then grip the fold about $\frac{1}{8}$ inch from the top, and fold again. This makes a rigid top-bar. Now cut in under the top-bar at each end, and fold the metal back far enough to make the follower the same length as those made of wood. These will last a lifetime, and be a constant source of satisfaction.

HOW TO PREVENT AFTER-SWARMING.

After-swarming is a nuisance; but it may be prevented and some honey secured at the same time. Hive the first swarm on the old stand, either in a new hive, removing the old one, or in the old hive after removing the old brood-frames, with the exception of one containing some young brood and honey. Cut out all queen-cells, if any, and take the rest of the brood-frames, just removed, to a hive on a new stand, after shaking off all the old bees. Close the entrance tight, so no bees can get in or out for 24 hours, then open it just wide enough so one bee can pass through. Keep enlarging the entrance a little each day until the colony becomes strong enough so that it may have the whole width of the hive, which will take, as a rule, from one to two weeks.

In this way there will be no after-swarming, and the whole force of workers can be left at the old stand.

Cedar Springs, Mich.

S. FARRINGTON.

[A metal division-board in cool or cold weather would be a good conductor of heat, and, therefore, during some parts of the year, would be too cold to put next to a cluster of bees.—ED.]

How to Get Rid of Laying Workers.

Referring to the article by Allen Latham, page 345, June 1, I will say that, whenever I find drones in worker-cells, I call it the work of laying workers, or of a small virgin, the result being the same. The main question is, what is the best way to get the colony in a normal condition?

When I find a colony having drones in worker-cells I carry the hive about a hundred yards from the apiary and dump every bee out on the grass. I take care to get every bee off the combs and from the inside of the hive, and then carry the hive back to its place again. An inferior queen or laying-workers will, in this way, get lost, not being used to going out of the hive; therefore there is no need of making a search.

Arroyo Grande, Cal.

M. D. PRICE.

[This plan of treatment has been mentioned before; but is it not possible that a laying worker might fly back?—ED.]

A New Advantage of the Flat Wrappers of Bee-Journals.

Ever since the present style of wrapper has been coming on GLEANINGS I have been pleased with it. When my copy comes I always write the date on the wrapper before removing it; then when I find an article that I might wish to refer to I write it on the wrapper. I keep all the wrappers; and when GLEANINGS is read through, as I always do, I slip it back in its nice cover with the important articles recorded in index style so I can pick it up and look it over without taking it out of the cover to hunt up the pages.

Fairmount, Ind.

LEWIS HOCKETT.

Our Homes

By A. I. Root

Glory to God in the highest, and on earth peace,
good will toward men.—LUKE 2:14.

They shall beat their swords into ploughshares,
and their spears into pruninghooks: nation shall
not lift sword against nation, neither shall they
learn war any more.—ISA. 2:4.

Some years ago Drummond gave us a bright little book entitled "The Greatest Thing in the World." And what do you think it was? Love, love for all humanity; just the kind John had in mind when he said "God is love." I do not know but Drummond might put it "the best thing in the world." Well, just now I have in mind discussing briefly the *worst* thing in the world. What is it that needs attention more than any thing else or more than any other one thing, that humanity may be protected, and that everybody may have a square deal—that is, so far as such things are possible? Well, it has been said over and over again that the worst thing that afflicts the world and humanity just now is the liquor-traffic; and, may the Lord be praised, the whole wide world is waking up; and not only that, it is *doing* things. Perhaps I had better say *we* are doing things, for the United States has the credit of making the start. Only yesterday I clipped the following from the *Chicago Advance*:

PROHIBITION IN SWEDEN.

Judging by a vote recently taken, Sweden is very much opposed to the liquor traffic and in favor of prohibition. The question voted on was the entire prohibition of the liquor-traffic in Sweden, and the vote stood: For prohibition, 388,904; against prohibition, 8777; neutral, or declining to vote, 52,612. Clear majority for prohibition, 307,525. Even in Stockholm, the capital city, the majority for prohibition was 59,511 in a total vote of 131,381.

It seems everybody was astonished (even the people who voted) to find in every part of that nation, city as well as country, that things had changed so wonderfully that the sentiment of the people at large was overwhelmingly in favor of banishing intoxicating liquors.* It made me think again of that glorious old hymn,

Hail to the brightness of Zion's glad morning.

Well, the liquor-traffic may be the worst thing in the world; but there is another thing—another awful wrong that is almost world-wide. Let me give you a clipping from the *Woman's National Daily*:

* Our stenographer, Mr. W. P. Root, suggests as follows:

This is the more striking, as Sweden has for many years made use of what is called the Gothenberg system, whereby the liquor-traffic was entirely in the hands of the government; and the defenders of governmental regulation have made a great deal out of this system as being something that would eliminate the profit going to the individual saloon-keeper and throw all the proceeds into the lap of the big saloon-keeper, the government itself. Now that this one crutch is knocked from under the arm of the tottering beer god it makes one wonder what is coming (or going) next.

We are building great battleships, two of them a year, costing \$10,000,000 each, and are paying \$1,000,000 a year to maintain each one, and I wish that the money expended in building just one battleship could be devoted to intelligent agriculture.

Well, now, if the above is not exactly true it is pretty nearly so. Ten million dollars for a great war-ship that will probably never be made use of! All that money, all the brains employed, are to go into the scrap-heap; and after it is done it is going to cost *another* million of dollars for caring for the great institution for *just one year*. Who pays for these great war-ships? who furnishes the money? Just recently there has been a great deal said about its costing so much to live. Our boys are made dishonest, and our girls are tempted to something a thousand times worse, just because they can not earn enough to procure daily food. I do not quite agree with this, and yet there *is* something in it. Once more, a lot of poor people have saved up a little against a rainy day. They have been wanting to deposit it somewhere; but so many have lost their hard earnings—yes, washwomen and hired girls have been swindled out of their careful savings so many times by so-called millionaires—that these poor hard-working people are at a loss to know where to put their money. Just now I can say, God be praised, for we have, finally, postal savings banks. Of course the interest is not much—perhaps 2 or 2½ per cent; but the money is absolutely safe. In discussing the matter here in our town of Medina a few days ago I was told that, while our savings banks do pay 4 per cent, if you live inside of the corporation the town taxes will amount to about 3 per cent; so the washwoman or hired girl has been getting only about one per cent for the use of her money—that is, for putting her money in the bank against a rainy day. I asked the question why it was necessary to tax these poor people so much. The reply was that it was for the various improvements in town, educating our children, and other good and praiseworthy purposes. The taxes which we pay cheerfully and honestly—at least the most of us do—are for the general good of the sons and daughters of America. My informant said, further, however, that the great burden of taxation falls on people who have money deposited somewhere. Men who have millions invested in various enterprises do not pay any thing like the taxes paid by those who have a little real money. The trouble is, Uncle Samuel has not been able, as yet, to get any spectacles that will enable him to see *who* owns every thing so he can look into the matter, and also see how our millionaires, big trust companies, and great railway combinations list their property in order to pay taxes like the washwoman and hired girl. Let me digress a little.

I have lately expressed my joy to hear of the good and wise measures that are being taken now to save human life. Our school-children and the babies (God bless them) during the past heated term in our great cities have received ice free of charge wherever it would help to save their lives. God

bless the babies, and our kind old Uncle Samuel for his thoughtful care.

It has just been my pleasure to make a small contribution to the fresh-air campaign to give the children from the cities a little outing. Well, while we are doing such tremendous things to save human life, how in the world can we consistently take measures to murder our people by the wholesale, and still mean to keep doing it? Somebody has said (perhaps it was Dr. Kellogg, in *Good Health*) that more stout capable young men lost their lives by typhoid fever in the recent Spanish-American war than were killed by the enemy. Those who were not killed outright were injured for life more or less by those terrible fevers, and much of it was caused by sending our soldiers where they could not have or did not have wholesome water to drink and wholesome food for their sustenance. Right here I can say, praise the Lord again for what the Health Commissions of our land have done to punish the wretches and villains who would poison our people for the sake of making a few more pennies on the food products they put up. May God speed the day when those who deliberately tamper with our daily food (either for babies or grown-up people) shall be punished so severely that they will remember the lessons as long as they live.

On page 1017, Aug. 15, 1908, I quoted an article from the *Christian Endeavor World*, headed "Let us Quit being Hypocrites." Let me make one extract from that:

Instead of building more war-ships, isn't it time to call a halt? With tens of thousands of our citizens begging for an opportunity to earn a living, isn't it time to call a halt on this wicked waste of money and energy? If we are going more and more into the war-ship business, let us be honest and pull down our churches. If we are to glorify war, let us quit glorifying the Prince of peace. Let us quit being hypocrites.

In reply to the above I wrote the following:

Let us quit being hypocrites, as the San Francisco *Star* has it, and come out in the open, and demand that this war-ship business be stopped in exactly the same way that we, as a people, not only demanded but succeeded in getting, the motto back on our coins, "In God We Trust." And if we trust in God we certainly do not need to invest 180 millions of dollars in one fleet of warships.

Yes, friends, for God's sake let us "quit being hypocrites."

And now I want to tell you that the above is only a preface to something *else* for which we can praise God. It seems we have a society in the city of New York, with headquarters at 507 Fifth Ave., called the New York Peace Society, and this is a world-wide federation. A leaflet is now in my hands from that society, whose heading reads as follows:

RESOLVED, by the Senate and House of Representatives of the United States of America in Congress assembled, that a commission of five members be appointed by the President of the United States to consider the expediency of utilizing existing international agencies for the purpose of limiting the armaments of the nations of the world by international agreement, and of constituting the combined navies of the world an international force for the preservation of universal peace, and to consider any report upon any other means to diminish the

expenditures of government for military purposes and lessen the probabilities of war.

Now, the thing that took hold of me mightily in the above resolution is in the last two lines. You will notice this commission is not only to preserve universal peace, but it urges a movement to discuss and report "upon any other means to diminish the expenditures of government for military purposes." As I understand it, the powers of the world are invited to meet together and see if we can not mutually agree to stop building war-ships that cost ten millions of dollars each. We are told in that circular that Emanuel Kant declared, in 1795, "We can never have universal peace until the world is politically organized;" and, furthermore, that even this can not be done "until the majority of nations have a representative form of government." And all of these things seem to be coming to pass.

Let me quote again:

Russia has its Duma; China has announced that shortly it will promulgate a constitution, while Turkey and Persia have each just gone through the throes of revolution and emerged with a vigorous parliament. If Kant's philosophy is sound, therefore, the world is at last ready for world organization and universal peace.

I should like to give place to this whole paper, but it is too long. If you will send a stamp to the National Peace Society, whose address I have given above, I am sure you will get it.

There is one other thing I want to quote; and while I quote it I should like to swing my cap and give a vigorous hurrah for Roosevelt.

Even Mr. Roosevelt in his remarkable Nobel peace address the other day at Christiania goes so far as to urge a "league of peace" to abolish war, paradoxically, by force if necessary.

The idea expressed above, of abolishing war by force, sounds almost like a joke; but I hope it will not require a \$10,000,000 man-of-war to compel obedience to the mandate, "You must stop fighting." Let me quote further:

It seems the destiny of the United States to lead in the peace movement. The United States is the world in miniature. It is a demonstration that all the races of the world can live in peace under one government, and its chief value to civilization is a demonstration of what this form of government is.

There is a big point in the above. For many years back, whenever I have felt disposed or strongly inclined to speak in a disrespectful way of the foreigners who have come to live among us, my conscience has almost always warned me to be careful. This nation is made up of people from all countries, just as we are told the "kingdom of heaven" is composed of all nations; therefore we should all be very careful lest we tread on somebody's toes or hurt somebody's feelings. It occurs to me that we "old Yankees," as we sometimes call ourselves, need to be especially careful in this respect. I, above all men, ought to be careful, for the dearest friend I have on earth came from "Merrie England" when she was only eight years old. May God be praised that she *did* come and consent to

stand by my side that she might check and reprove me whenever I might be inclined, in my vehement and pushing way, to speak disrespectfully of *any* of my fellow-men, no matter where they were born or brought up.

This paper says further, "It seems to be the destiny of the United States to lead in the peace movement." May God help our country to be up and dressed, and ready for the work. This paper further says, "In our history no man has done more to spread the gospel of peace than the two Pennsylvanians, William Penn and Benjamin Franklin." Bless the memory of those two great and good men. Are they all dead and gone? Not quite. Read the following:

Coming down to more recent times it is probably a fact that the late Frederick W. Holls, of New York, had more to do with the establishment of the Hague Court than any one else, while Mr. Carnegie has given it a palace in which it shall hereafter sit.

May the Holy Spirit bless our Mr. Carnegie; and may he get his sleeves rolled up and get right into the work for peace. God grant that he too shall eventually, come out under the banners of the Prince of Peace, whose advent was announced in the words of our text, "Peace on earth."

If I understand the paper correctly, our present President, Mr. Taft, is also in favor of this peace movement we are talking about.* He is a big man in many ways; and if we as a people can not stand back of him and follow in his wake, especially for peace, we ought to be ashamed of ourselves.

I wish to quote the concluding paragraph of that leaflet in closing:

If the world federation commission is appointed by the United States government with Theodore Roosevelt as chairman, can any one believe that the day will not be brought measurably nearer, when, as Victor Hugo prophesied in 1849, "the only battlefield will be the market opening to commerce, and the human mind opening to new ideas"?

And finally, brethren, is it not about time for us to "quit being hypocrites"?

Ex-President Roosevelt, in his address about "abolishing war by force," calls to mind a little incident. By the way, I have several times noticed that it is often a dangerous piece of business to undertake to act as peacemaker. Only a few years ago a couple of men on the streets of Cleveland got to fighting. I do not know but it was a sort of race war. A third man came along and commenced to remonstrate; and he finally undertook, as Roosevelt expressed it, to abolish *war by force*. As he did not succeed very well he called on a fourth person to help him stop the two neighbors fighting. In a little time, instead of a fight between two it was a fight between four. Some more neighbors joined the crowd, and they likewise tried remonstrance, and got into the fight themselves, and pretty soon there were a dozen or twenty fighting like

cats and dogs, shooting promiscuously in the crowded streets, and wounding several bystanders; and the saddest part of it was that not more than two in the whole lot knew what they were fighting about *unless* they were fighting for "peace." A policeman, however, who had *authority*, finally succeeded in quelling the hubbub. But there were many sore heads and some bleeding noses before the end came. Now, this was a small private affair that was ended in perhaps a small part of an hour. What would be the result, pray tell me, if such a thing were to occur among *nations*? Where could we find a policeman clothed with sufficient official authority and something else to back him up so that he might say as did the dear Savior to the discordant elements, "Peace, be still"? And by the way, dear friends, is this world federation, of peace on earth (and good will to men) to be under the dominion of "the Lamb of God that taketh away the sins of the world"?

I had not intended even to mention the celebrated prize-fight; in fact, the above was in type before the fight occurred. It *did* occur to me, however, that the fight was a good deal in line with the \$10,000,000 warships. There was this difference, however: The making of the ship required mechanical skill and the benefits of modern science; whereas the prize-fight required nothing of the kind. We all felt sad when the shameful affair was permitted to take place *anywhere* in the United States; but as a colored man won the battle—a man without culture or intelligence, if I am correctly informed—the whole affair may, in God's providence, turn out to be a wonderful object-lesson.* If one of these prize-fighters should test his strength with a mule, people would think he had gone crazy; and may be this event may have the effect of bringing some crazy people to their senses. The conflicts now before the world can not be settled by brute strength (which comes largely by accident), nor even by scientific attainments and mechanical skill, but by something along the line of that beautiful text in Zechariah, which says, "Not by might nor by power, but by my Spirit, saith the Lord of hosts." If the world should decide to encourage and uphold prize-fights, then we might go on in the strife to see what nation could build the most effective engines for *murdering* our sons and daughters; but if our greatest and highest aim is to *save* life, and to find how we may most success-

* While the white man was badly pounded and bruised, the colored man escaped with only one very slight bruise; for his opponent, with all his skill and training and backing, was hardly able to touch him at all. If the outcome shall result in lifting all humanity to a higher and better level we can all join in that beautiful little hymn that they are still singing in that little church amid the hills of Northern Michigan:

Lord, lift me up, and let me stand
By faith on heaven's table-land—
A higher plane than I have found—
Lord, plant my feet on higher ground.

* It is expected that ex-President Roosevelt will be named by President Taft as chairman of the commission authorized by the joint resolution of congress to report to congress the plans for permanent and world-wide peace, thereby relieving the nations of the burdens of armament.—*Cleveland Plain Dealer*.

fully fight *sickness, pain, and death*, then we want to put our money into something better than prizefights or even war-ships, and strive to use it in some way so it will be "treasure laid up in heaven."

The above talk about war and prizefights recalls to mind some lines my mother taught me when I was just learning to use words. So far as I can recall they run something like this:

Let dogs delight to bark and bite,
For God hath made them so;
Let bears and lions growl and fight,
For 'tis their nature too.

But you, dear children, should not let
Your angry passions rise;
Your little hands were never made
To tear each other's eyes.

THE SHAME OF OHIO.

On p. 361, June 1, I said, "God knows how I dislike the very thought of war; but if nothing but war will stop this awful traffic I should like to see war come." Little did I think, as I dictated the above, that a liquor war would so soon be opened up here in our fair State of Ohio. I have space here only to review the sad events briefly.

Licking Co., O., voted dry. Newark, the county-seat, was wet, and voted to remain wet. The county voted against the wicked city, and the saloon-keepers and speakeasies massed themselves together and decided to disobey the law. Knowing that they would make a resistance the Anti-saloon League sent *twenty* picked men, duly empowered by law to compel those rebels *against* law to stop their liquor-selling. A mob was soon raised to resist the officers, and in the *mélée* a saloon-keeper was shot. To protect the detective from the violence of the mob he was placed in jail. The mob kept increasing, and finally declared they would tear the jail down unless the doors were opened, and for two hours they besieged the jail. But the mayor, like too many other mayors, was in sympathy with the wets, and he did nothing or next to nothing to preserve order. At the end of about two hours the saloon-keeper died from the effect of the shot from the officer, whom he had cornered up and apparently intended to kill. This aroused the insane mob to a fury. They tore up a bar of railroad iron, and, using it as a battering-ram, smashed in the brick walls of the jail, took the Anti-saloon officer, and in the presence of a crowd of 5000 men, women, and children, hanged him to a telegraph-pole. There his bruised and bleeding body (for he had been badly pounded up before being put in the jail) hung for half an hour, exposed to the gaze of all. If I am correct, the mayor and sheriff finally began to consider what they had done or had permitted to be done, and took his body down, closed the saloons that had been, so far, wide open during the night, and restored a semblance of law and order. As we go to press, the papers tell us that Governor Harmon has been summoned to the spot. The mayor and sheriff have been

suspended from office awaiting trial, and the Governor has made the following declaration, which I clip from the *Cleveland Plain Dealer* of July 11:

As for the lynching, the reports made to me and my own investigation have convinced me that it was murder pure and simple, a dastardly affair that could have been prevented. No such indignity to the State of Ohio can be permitted without the most vigorous efforts to punish those responsible.

May God be praised that we have a governor who is not afraid to call things by their right names, and act promptly.

When, some years ago, a whisky-crazed mob destroyed the City Hall and other buildings in our neighboring city of Akron, something like forty rioters were sent to the penitentiary. We are hoping and praying that the crazy men who trampled law under foot in Newark may meet a like punishment.

Later.—Just as we go to press, July 12, we clip the following from the *Cleveland Plain Dealer*:

Judson Harmon, Governor of Ohio, to-night decreed that death in the electric chair shall be the fate of those who defied the law and lynched a private detective in this city late Friday night. Charges of murder in the first degree will be preferred if sufficient evidence as to the identity of the mob's ringleaders is forthcoming. Gov. Harmon insists that such evidence be produced.

LAW ENFORCEMENT, ETC.

A. J. Root:—I have just been reading what you say about the opium business. It does seem hard treatment to cut off their heads; but it surely inspires a fear of the law, and cuts out all hopes of being "pardonned out" in a few days or weeks. If all our prisoners knew that they were "in for keeps" till the expiration of their term, whether a month or a life, they would have more respect for the law; and, further, if they knew that the law officers were all on the lookout for lawbreakers, and would surely do their duty in the premises, they would be more careful how they transgress. I am for a strict enforcement of the law for both high and low, and believe good would come of it.

No. Yakima, Wash.

R. J. BENBOW.

"SEEK YE FIRST THE KINGDOM OF GOD
AND HIS RIGHTEOUSNESS," ETC.

In the *Sunday School Times* for June 26 is a wonderful story entitled "From Three Oaks to Jerusalem and Beyond," E. K. Warren, President of the World's Sunday-school Association, when he was a young man living in Three Oaks, Mich., had charge of a little country store. He also "had charge" of a good-sized class of young men in the Sunday-school. Well, part of the trade at that country store was tobacco. Like other country towns in the lumber regions, very likely tobacco was a considerable part of the trade. Well, young Warren finally become so well satisfied that it was wrong for him, at least, in his position, to sell tobacco that he decided to cut it entirely out of their business. Here is a clipping from that article in the *Sunday School Times*. Read it and see what you think of it.

This was an expensive thing to do, of course. The clerks would come to him and say that such and such a customer had called for tobacco, and was so dissatisfied because he couldn't get it that they were afraid they would lose his trade entirely. Whenever such a case was reported to him, the store-keeper would go straight to the disgruntled man and talk somewhat as follows:

"See here, Will, does your boy John use tobacco?"

"No, he doesn't."

"Do you want him to?"

"No, Ed, I don't."

"Well, I'm working for your boy John. What will he think of me if he sees me selling it?"

"And the answer was pretty likely to be, 'You're all right, Ed. Keep it up; I'll trade with you.'"

As a boy, young Edward Warren had had an experience with drink and saloons that was a healthy one. He was brought up in total abstinence, of course; and he was given his first position in the country-store because he did not drink, his predecessor there having gone to the bad because of it. But the saloon influence was strong among his companions, and they drank beer freely. He made an attempt to keep away from the saloon which most of his friends frequented, and where the ball-and-bell game was a popular attraction in that day; but it was not easy to stay away, though when he was urged by the others to drink with them, as he constantly was, he always declined. The saloon-keeper himself, knowing Ed as a boy of standing and influence, took his part when the pressure grew pretty strong, and told them to "leave Ed alone." He even went so far as to keep oranges there, so that the boy might have them instead of beer.

But one evening when the usual crowd were together, Ed's friends had been drinking so much that they determined to have their way with him. He declined all urging, as usual. Then the crowd took him in hand. Stretching him out on the floor, which was covered with sawdust and tobacco stains, four of them took charge of his arms and legs, and a fifth poured beer as well as he could between his closed teeth, and copiously down his collar and neck.

That did not win Ed to the liquor habit, and it broke him of the saloon habit. He found that he and the saloon did not have enough in common to justify his making it even a visiting-place, and he never went there again. Not only that, but some fifty years later, during the first decade of the twentieth century, that same village of Three Oaks has had no saloons where this sort of outrage could be worked. The reason is that that boy, now grown, has made it his business to get his village rid of them. First he made it hot for the few saloons that were there, by prosecuting them for every breach of the law that they committed, such as Sunday opening and selling after hours. In this way he crowded them down in number from three to two, then to one. Finally, he offered to pay to the village board, if it would shut out that last saloon, the two hundred and fifty dollars annual license sum that it was afraid it would lose by going dry; and it accepted his offer. He agreed to give them notice any time he got tired of the arrangement and wanted to stop, so that they might go wet then if they wished. But that has been going on now for about ten years, and he has not given notice yet.

Poultry Department

By A. I. Root

THE "KELLERSTRASS WAY."

On page 400, June 15, I mentioned the way in which Kellerstrass copied from an old almanac without giving credit. Notwithstanding, I supposed that he had really taken premiums right and left all over our land for his superior Crystal White Orpingtons; that is, I took it for granted that he had, by some means or other, produced a very superior strain of fowls that our judges acknowledged were ahead of every thing else in this country or even any foreign

country. If, however, he did not scruple to mislead in his great claims for his book, why should he scruple about misleading in other ways? See the following:

I have been reading your Home papers for a number of years, and am particularly interested at present in what you have published regarding Mr. Ernest Kellerstrass. It is my opinion that his customers are so well pleased because they believe he really has given them the best that can be obtained. During the past two years, more or less, the advertisements of Mr. K. contain this clause:

"As to their fancy quality, they won first at Madison Square Garden, New York, 1905, 1906, 1907, and 1908, and also at Crystal Palace, London, England, and Chicago and Boston."

I am quite sure that, were those customers to ascertain the fact that Mr. Kellerstrass had no exhibit whatever at New York in 1905, 1906, and 1907, and that, in my opinion, he was beaten badly in 1908, and that he has not exhibited at Boston during the six years prior to 1910, it would be a safe proposition that they would not be so well pleased. These are facts easily proven; and if one would take the trouble it could be easily shown, I think, that the gentleman never exhibited at the Crystal Palace.

At the bottom of page 15 of the book "The Kellerstrass Way" we find, "I have shown them that my chickens are all right for the showroom. Now I am going home," etc. . . . "Just as soon as the poultry-journals will show me that there is a breeder who has made as good a record as I did you may rest assured that I am going into the showroom, and I will beat him. If I don't I will quit the poultry business."

As the gentleman had an exhibit of 24 entries in his four classes of White Orpingtons at Madison Square Garden during the past winter, conditions must have existed which demanded his presence again in the showroom. He did not win, obtaining but one first prize with his 24 entries against 3 firsts won by the Owen Farm on 8 entries. Will the gentleman now quit the poultry business?

Lake Roland, Md., June 20. BENJ. B. JONES.

Now, if there is any mistake in the above statement, and if Kellerstrass has really, by hard work, produced a strain of fowls of such superior excellence that it is a good investment to pay not only \$2.00 an egg, but even \$10.00, to get the very best in the world, we shall be very glad to give him space to explain. If he has *not* won all these prizes it is certainly time that the poultry-journals and the agricultural papers should stop accepting his advertisements, and all unite in lending a hand to show him up in his true colors.

POULTRY SECRETS AND POULTRY FRAUDS IN GENERAL.

On page 648, Oct. 15, last year, I mentioned sending a dollar to W. R. Curtis & Co., Ransomville, N. Y., for a valuable book telling how they raised 25,000 chickens without losing more than 5 per cent. The book contained only about 12 pages besides the advertisements. At the same time, I sent \$3.00 for a lampless brooder. They claimed it was a *fireless* brooder; but after I got it I learned that the chicks "needed heat of some kind for the first week or two." The brooder was a rough and poorly made box that should not have cost a dollar. At the time I showed them up, a good many of our readers thought strange of it because they were "such a big concern," etc. That valuable book, "The Dollar Hen," gives the Curtis Brothers credit of raising 20,000 chickens a year, but they say the Curtis fireless brooder costs only about 15 cents. Well,

such a box *might* be made for about 15 cents in the rough; but to have it made in good shape, and painted, 75 cts. or a dollar would be a fair price for it. But I had to pay \$3.00, and then another dollar for a badly printed little book with a dozen pages telling how to use it. Well, the *Rural New-Yorker* of July 9 gives a couple of letters of complaint from those who ordered day-old chicks from W. R. Curtis, of Ransomville, N. Y. They may be a big institution; but I think it is no more than fair that chicken folks, especially the beginners, should have notice that W. R. Curtis & Co. are more concerned about getting the dollars in their grasp than they are in giving satisfaction to their customers afterward.

THE SITTING HEN VERSUS THE INCUBATOR FOR STARTING GERMINATION.

The article below I clipped from the *Petaluma Weekly* for Jan. 22:

I once placed a number of infertile eggs that had been tested out of the incubator on the third day under a broody hen, thinking to give them to her for a short time only, and see whether she really meant business or not. I did not receive the eggs I intended to place under the hen, and no more attention was paid to her. What was my surprise when, at the end of about three weeks, she came off with about three chicks. There were eight eggs in all, and I at once examined those remaining in the nest. Four were still clear and one rotten, showing that it had started to develop.

This set me thinking, and I made up my mind to investigate further. If I was throwing out fertile eggs from my incubator I wanted to know it. I soon learned that experiment stations had like experiences, and issued statements that a hen would often start and hatch eggs that an incubator would not start, but they gave no explanation of the cause. It was not hard to find, however. It is due to the fact that the incubator heats the whole egg, while the hen applies heat only to the top next to the germ.

I am not surprised at the above. From some experiments I made I have for some time felt pretty sure that a sitting hen has some strange power to get a larger percentage of fertile eggs than any incubator—at least any incubator I am acquainted with; and if I am correct one of the poultry secrets that has been offered for sale was the plan of putting your eggs under a sitting hen for three or four days, or even a week, before putting them into the incubator. The statement was made that almost any incubator would produce a good hatch if a sitting hen set the pace or brooded over them for the first week. You may remember some of my experiments a year ago with eggs taken from a sitting hen and placed in our contact-heat incubator. They hatched out nice chickens almost every time. Since coming back to Ohio I have allowed five hens to hatch out chickens. Three of them stole their nests; two of the three hatched every egg but one. One of the three hatched every egg, and has every chicken yet. One hen stole her nest, hatched every egg by the first of July, and never was shut up at all, and she has every chicken yet. By the way, I have two neighbors who have hatched with incubators and hens something like 500 chickens each. Both got along nicely for a while; but along in June I was asked

to tell, if I could, what to do to stop the chickens from dying. Now, I am not a professional chicken doctor; but the safest and sanest thing I could think of was this: Put the hens and chickens out in an open field away from the rest, where no other fowls can have access, if possible. Let the hen run where she pleases with her chickens—of course, making sure they have good water to drink and plenty of broken grain of different sorts—say the best quality of baby-chick food. So far as I know, both the incubator chicks and those hatched under the hen have ceased dying. Where the mother hen can lead her chickens here and there until they are tired out toward the close of the day, and in a hurry to get to their roosting-place, they are under natural conditions; and where they have considerable territory to run over, this mother-hen will help them to pick out what nature demands; and much the same thing, I think, is true with chicks hatched in an incubator. Do not have too many flocks on a small area, and give them a chance to ramble to their hearts' content, and then they will, as a rule, come out all right.

The suggestion in the paragraph I have quoted, that the hen starts fertility when an incubator would not is because she applies heat only to the top of the egg. I do not think is all of the reason, however. It is right in the line, you will notice, of the idea of "contact heat." Perhaps we shall some day wrest from Nature her secrets so we can get as good fertility by means of the incubator as by a sitting hen. I hope so.

THE WRIGHT BROTHERS AND THEIR FLYING- MACHINES UP TO DATE.

I can not go into details just now, because there are so many of the Wright machines, and so much is being done with them all over the world. But as we go to press, notice comes in the papers that one of their pupils has made a flight of something over 6000 feet, or over a mile in height, as you will notice. When first making their experiments, if I remember correctly, the brothers did not expect to be able to reach any great height—nothing like that reached by a gas balloon, for instance; but it now transpires they they can reach an altitude of at least a mile; and it *may* transpire there will be greater safety at a considerable distance above the earth. Perhaps we had better wait a little and see. And I predict and firmly believe we *shall* "see" with our own eyes very soon the aeroplanes gliding over our heads among the clouds.

OVER A MILE A MINUTE.

Aside from the above we learn from the *Plain Dealer* of July 11 that Leon Morane, at Rheims, has just broken the record by making a speed at the rate of a little more than 68 miles an hour. The paper does not state what aeroplane was used, but I presume it is one of the patterns of the Wright brothers,

Gleanings in Bee Culture

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Editorial

IN our next issue we expect to show a very interesting object-lesson on the subject of supporting foundation while it is being drawn into comb.

SENDING SAMPLES OF BROOD TO THE BUREAU OF ENTOMOLOGY.

DR. E. F. PHILLIPS, of the Bureau of Entomology, Washington, D. C., wishes us to say that the Bureau will be glad to receive for examination any samples of comb or brood supposed to be diseased. The Bureau will render a report without expense as soon as an examination can be made.

The work that Dr. Phillips and his assistants are doing in this line is of immense service to bee-keepers all over the country; and those who have suspicious patches of brood should send them on at once to Washington. Of course, care should be taken to put up the sample in strong boxes, either metal or wood. If they contain honey they should first be wrapped in paraffine paper. In lieu of this a strong manilla paper will do very well. Address each sample to Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C.

IMPROVEMENTS IN EXTRACTING MACHINERY; HOW TO KEEP COOL.

THE editors of this journal have been giving some little attention to the matter of extracting honey in a wholesale way. Oberlin, Ohio, where resides Mr. Chalon Fowls, was the center of our operations, and where too we have been testing out some improvements in the apparatus and machinery. We hope to show these later in these columns.

While we were "helping" to extract in the Fowls honey-house, we might incidentally remark that the little gasoline-engine, to run the power-extractor, the two gasoline-burners for the capping-melter, and the little oil-burner for the steam uncapping-knife, made the room uncomfortably warm. During the time the extractor was running, there was a slight breeze. It occurred to us that, at a very slight expense, a fan could be mounted, either on the extractor or belted on the engine. This would keep up a breeze that would amount to something. One scheme is to extend the ex-

tractor shaft up some three or feet above the top of the machine. On top of this, mount a fan something like the propellor wheel of a boat. Almost any one with a little ingenuity could rig up a couple of boards on the plan of an old-fashioned windmill. While the extractor was being run by the gas-engine this would make a nice light downward breeze all over the room. Another plan is to put a little fan on the end of a counter-shaft and belt to the gas-engine. In either case the expense would be slight, and would add materially to the comfort of those doing the work of extracting and uncapping.

THE ATTEMPT AT FOUL-BROOD LEGISLATION IN KENTUCKY FAILS.

As a general thing, the first attempt by bee-keepers at securing brood-disease legislation turns out to be unsatisfactory in some way or another. Very often the law is defective; but in the case of the effort put forth by the bee-keepers of Kentucky, the bill proposed had no enacting clause, and therefore was ineffective. We are indebted to W. C. Furnas for the following clipping giving a brief history of the proceedings. We hope that this first failure will only serve as an impetus to our southern brothers to get a law passed at the next opportunity, which shall be a model in every respect.

While preparing the acts of the legislature for the printers to be put in the Acts of 1910, Charles H. Morris discovered to-day that the bill by Senator Chipman, providing for inspection of apiaries, had no enacting clause, and, therefore, will be ineffective.

The fact that the important clause was left off the bill was not discovered when it was compared in the Senate nor when Gov. Wilson signed it. The bill was the pet of Senator N. B. Chipman, of Pendleton County, and was intended to protect bees from disease.

HONEY-CROP CONDITIONS; A FAIR FLOW FROM CLOVER AND A LIGHT CROP IN THE WEST.

In some respects this has been a peculiar season. In some localities there has been the most remarkable honey-flow ever known. In others, particularly south of the Ohio River, there has been "nothing doing." South of the Ohio River it has been too wet—rain, rain, all the time. In Michigan, Wisconsin, and Minnesota, there has been a drouth. In the western portion of the country, taking in the irrigated regions, the alfalfa crop will be light. There has been a light flow in Southern California. In parts of Iowa, Indiana, Ohio, New York, Pennsylvania, and in Vermont especially, there has

been an unusually heavy honey-flow from clover. Reports from these portions show that the fields were almost white with clover, as if they were covered with snow; and where it has not been too dry there has been from a fair to a good crop. In Michigan the first indications showed a light crop; but late rains are improving conditions somewhat. In Illinois the yield will be anywhere from light to fair. In Wisconsin and Minnesota, light to poor. Missouri and Nebraska will have a good yield. Taking it all in all, this will be a better clover year, probably, than we have had before for some time, and the quality will be of the very finest. The light crop of western alfalfa and sage honey will tend to give a boost to the price of clover, even if there should be a fairly good yield in the Eastern States.

The following are scattering reports received since our last issue, in answer to the following questions:

1. Condition of bees?
2. Climatic conditions (favorable or not)?
3. Are bee-men suffering from drouth or wet weather?
4. Prospects for honey crop?
5. Compare prospects with last year, same date.
6. Percentage of full crop harvested to date?
7. Compare yield with last year, same date.
8. Kind of honey produced in your locality, comb or extracted?
9. Color of honey produced this year?
10. Price local dealers are paying for honey?
11. Price bee-men are holding for?
12. Is the crop moving readily?

1, fair; 2, favorable; 3, no; 4, fair; 5, same; 6, 65 per cent; 7, same; 8, extracted alfalfa; 9, light amber; 10, 5%; 11, 6 to 6½%; 12, association marketing in East at 6 to 6½%.

El Centro, Cal., July 15.

H. PERKINS.

Honey conditions here are not quite so good as last year. Since July 1, conditions have improved, strong colonies working in second supers: medium strong freely in first, and weak ones rapidly building up.

Canon City, Col., July 22.

W. G. WRIGHT.

1, weak early, but strong now; 2, favorable; 3, somewhat wet at present; 4, saw palmetto short; cabbage palmetto is yielding some now, but can't tell outcome; 5, a little better; 6, I don't know, but think ¾; 7, about the same; short; 8, extracted; 9, light; 10, 75 to 80 per gal., but little handled; 11, 75 to 85; 12, it is not.

Osprey, Fla., July 19.

I. T. SHUMARD.

Bees wintered badly; weather now favorable, but clover flow is over. Prospect for fall crop is only fair. Crop secured is a little larger than 1909; 25 per cent of crop harvested; only comb honey is produced. Honey produced is very fine and white. Honey is selling at 15 to 20. There will be none to move. Nearly one-half of the bees were lost in wintering. The cold weather in May was bad. Clover abundant, but yield small.

Milan, Ills., July 19.

C. H. DIBBERN.

1, good; 2, not so good; from the 4th to 16th too much rain, but now the white clover is beginning to yield honey again; 3, been suffering from wet weather; 4, good; 5, nothing doing last year around here; 6, about 30 per cent; 7, bees had hardly enough to live on; 8, both; 9, white; 10, 18 to 20 for comb; 15 to 18 for chunk or strained; 11, 18 and 20; 12, sells as fast as taken off the hive.

Somerville, Ind., July 22. LEONARD D. MASSIE.

Honey is one-fourth of a good crop in Central Iowa.

Colo, Iowa, July 21.

D. E. LHOMMEDIEU.

1, fair to good; 2, first part of season good, followed by drouth; 3, yes; 4, good; best crop for years; 5, not very good last year; 6, flow is over; 7, 150 lbs. better than last year; 8, both; 9, white.

Dixon, Iowa, July 19.

E. A. DONEY.

White-clover honey-flow about as good as we have had in twenty years.

Shenandoah, Iowa, July 20.

O. H. HYATT.

1, good; 2, very dry; 4, ½ crop to date; no prospects of fall flow; 7, ½ better; 8, comb; 9, light; 11, 15 cts.; 12, yes.

Viola, Ia., July 20.

A. T. STOUT.

1, good; 2, fair; 3, rather dry; 4, average gain of my scale colony for June past 10 years, 35 lbs.; this year's gain for June, 46½; 5, much better; 6, about 10 to 15 per cent; 7, scale colony, 1909, gain, 24 lbs.; 1910, gain of 55½; 8, both; 9, white clover; 10, \$3.60 per case of 24 sections; 11, \$3.60 per case of 24 sections; 12, yes.

Russell, Iowa, July 9.

J. C. DAVIS.

1, good; 2, dry, but better than wet years; 3, a little from drouth; 4, good; 5, 100 per cent better; 6, 90; 7, see No. 5; 8, mostly comb; 9, white-clover and basswood, quality good; beautiful; 10, 15; 11, 15; 12, just a little. In this locality it is the best season in years. Basswood is just over. The fall crop may depend on timely showers.

Forest City, Iowa, July 19.

EUGENE SECOR.

1, my bees good; others, heavy winter loss; 2, no; 3, drouth stopped work July 4; 4, average; no basswood bloom; 5, 1; 7, 6, 50; 8, both; 9, white; 10, about 15 cts. per lb., comb or sections; 11, as above; 12, too early; bound to be a demand greater than for years on account of no fruit; not even a Duchess apple here.

Marshalltown, Iowa, July 21.

E. C. WHEELER.

1, bees healthy, all swarms weak June 1; 2, favorable; 3, nearly a drouth; 4, fair; 5, much better; 6, ½ to ¾ to date; 7, much larger; 8, comb and extracted; 9, white, clover; 10, section, 12½; bulk, 11; extracted, 10, without container; 11, normally. No swarms this season from yard, and very few wild ones.

Buckgrove, Iowa, July 20.

A. F. BONNEY.

1, fine condition; 2, never better; 3, just enough rain; condition fine; 4, very good; 5, no comparison; no white-clover honey last year; 6, 100 per cent; 7, very light at this date a year ago; full crop now; 8, mostly comb; 9, white thus far; 10, none to speak of on the market yet. I took off one super or one 24-section case which I am retailing at 15 cts. per section; price to dealers, 12½; 11, I am going to try for \$3.50 from dealers; this is early honey; 12, in a retail way, yes; honey white, and finished.

Paulina, Ia., July 20.

F. L. PARKE.

1, good; 2, fair; 3, no; 4, fair; 5, better; 6, ½; 7, 50 per cent better; 8, comb; 9, white, clover; 10, \$3.00 to \$3.25; 12, yes. Bees are in fine condition. White clover is about all over; averaged about 50 lbs. comb honey per colony.

Circleville, Kans., July 19. CHAS. S. BORDNER.

1, fine; 2, good, but too wet; 3, wet; 4, poor; 5, better; 6, 10 per cent; 7, last year; 8, comb, mostly; 9, white; 10, no local dealers; 11, 15 cts., 4¼ sections; 12, none to move.

Walton, Ky., July 19.

J. G. CRISLER.

1, fine; 2, too wet; 3, wet; 4, good, considering weather; 5, 50 per cent better; 6, one-third; 7, about double; 8, comb; 9, white; 10, 12½ cts.; 11, not holding; 12, yes.

Tupelo, Miss., July 20.

J. D. ROWAN.

The honey season so far has been extra; have had plenty of rain; the prospects are good for fall flow.

Avalon, Mo., July 20.

F. G. ASHBAUGH.

North Missouri will have one-half crop from white clover; quality good. We do not have any fall surplus here.

Unionville, Mo., July 19.

ELMER F. QUIGLEY.

Total amount of honey for 1909, 5000 lbs.; colonies, 200; spring, 1910, had 250 colonies; up to date I have 250; no increase up to date. I have over 20,000 lbs. of honey. Nearly all extracted retails to the grocer, 9½. I sell almost all to consumers. I have extracted 3000 lbs., sold 2500; specific gravity, 43; honey is very white.

Liberty, Mo., July 19.

J. F. DIEMER.

Since my last report the bees are doing better; had some nice rains. Bees are working well on basswood.

Wolverine, Mich., July 23.

L. K. FEICK.

1, fair to good; 2, not favorable; 3, yes; very dry; 4, not the best; 5, not so good north, but better so far here; 6, none harvested here; some in Northern Michigan yard; 7, about ½; 8, both; 9, very light in color; 10, 11, 12, too early.

Otsego, Mich., July 21.

O. H. TOWNSEND.

1, good; 2, unfavorable; 3, drouth; 4, 25 per cent; 5, about the same; 6, none; 7, about the same; 8, extracted; 9, light; 10, don't know; 11, 8 to 10 cts. for extracted; 12, will when off hive.

Dimondale, Mich., July 18.

J. L. LEWIS.

1, good; 2, bad; 3, drouth; 4, not good; 5, same as last year; 6, 25 per cent; 7, same; 8, comb; 9, half white and half amber; 10, 12½ cents; 11, getting what they ask, 12½ cents, because it has been mixed so far; 12, yes.

Leer, Mich., July 18.

EULAR THORNE.

Two years ago, 70 lbs. of comb honey per colony; a year ago, about 25 lbs.; this season, 45 lbs. clover honey, comb, per colony.

Pittsford, Mich., July 21.

GEO. H. DENMAN.

I have taken off about 2000 lbs. so far, and hope and expect to get as much more—an average of about 20 lbs. to the colony—not more than half a crop. Basswood is gone, and clover is all dried up. We get no fall honey here.

Lapeer, Mich., July 22.

R. L. TAYLOR.

1, fair; 2 very poor; 3, dryest in years; 4, we have all we shall get this year—about 20 lbs., extracted per colony; 5, better; 6, 25 per cent; 7, nothing last year; 8, extracted; 9, white; 10, 9 to 10 cts., extracted; 16 to 18 for comb; 11, nothing much to hold; 12, same.

Ronneby, Minn., July 19.

J. E. HUGHES.

Bees built up strong on dandelion; are doing well on white, alsike, and sweet clover; 100 per cent better than last year; good local market. Merchants are paying 17 cts. cash for No. 1 comb; 12½ cts. for extracted in quart and pint Mason jars.

Stevensville, Mont., July 21.

J. RIDLEY.

1, good; 2, unfavorable; 3, wet; 4, poor; 5, was not here last year; 6, one-fourth; 8, extracted; 9, light amber; 11, 6½ cents; 12, slow.

Whiteville, N. C., July 23.

F. R. JORDAN.

1, good; 2, favorable; 3, little dry; 4, fair; 5, better; 6, none harvested yet; 7, not taken off yet; 8, extracted; 9, white; 10, don't know; 11, early; 12, above.

Randolph, N. Y., July 11.

GEO. SHIBER.

1, good; 2 and 3, very dry since June 10; 4, flow over; 6, 25 per cent; 7, about one-third this year as last; 8, mostly comb; 9, white, but slightly travel-stained.

Clarkson, N. Y., July 21.

WM. C. HUNT.

Most of the bee-keepers report a very good season.

Syracuse, N. Y., July 22.

F. A. SALISBURY.

Large crop of clover here. Bees are filling supers very rapidly. Honey has a finer flavor than usual. One swarm, hived June 27, on full sheets of foundation, filled hive and one super in ten days; second super is now full. Bees are now filling the third; sections 4x5x1½, one-inch starters.

RALPH T. PATTERSON.

Newark Valley, N. Y., July 17.

Nearly all the bees died in this locality last winter. White clover came out early, and was a fine crop. The hives are full now. Basswood bloom was cut short by dry weather.

Plattsmouth, Neb., July 21.

J. M. YOUNG.

1, fairly good; 2, no; 3, drouth; 4, very poor; 5, very small percentage; 6, last year, 1 cap of honey-dew; this year, 1½ caps of dandelion honey and 2½ caps of clover; 9, white and light green cost 10 to 15 cts.; 10, yes, big demand. Bees are pulling out worker brood now; no flow of honey; are using up stores now.

Elk Creek, Neb., July 22.

G. W. BRINK.

1, fair; 2, very unfavorable up to July 1; 3, wet; 4, not good; may be good fall flow; 5, not as good; 6, 7, none; 8, all comb; 9, light; 10, 17 cts.

Kitchen, Ohio, July 20.

E. E. SMITH.

1, fair; 2, was good; 3, drouth at present; 4, average; 5, nothing but honey-dew last year; 6, 75 per cent; 8, mostly comb; 9, white; 10, 14 to 15 cts.; 12, yes, good sale; local markets will take all that is produced in this county.

Celina, O., July 21.

D. W. HARKINS.

1, strong; 2, unfavorable; 3, wet; 4, very poor; 5, prospects for fall honey good; 6, 10 per cent; 7, 10 per cent; 8, comb; 9, slightly amber, and amber capings; 10, 11, 12, no sales. Retail price here is nominally 15 cts. White clover, no crop.

Bladen, O., July 21.

CHAS. H. CARGO.

It looks now as if the honey crop would be a complete failure in this section, as clover is gone and there is no basswood here.

Washington, Pa., July 22.

S. B. POST.

The prospects for a honey crop in this locality are fine, having a good flow of honey from white clover. Millheim, Pa., July 20.

D. BREON.

Bees are doing about half as well as last year. April and May, too wet and cold; since then, too dry.

Lucinda, Pa., July 25.

J. B. VOGELBACKS.

Bees were starving up to July 1; since then have averaged probably 20 lbs. per colony; seem to be working well now; cold and wet up to June 10, then drouth to July 15; since then, showers once or twice a week.

Marienville, Pa., July 25.

J. E. GAUL.

1, good now; 2, good now; very bad up to five weeks ago; 3, suffered from cold wet rains in the early part of May; had freezing weather May 5 and 6; 4, not good unless we get it from fall flowers; 5, no honey off yet; had over 900 lbs. off at this time last year; 6, none; 7, no yield; 8, clover, wild spider, or cleome, goldenrod, etc.; 9, none yet; 10, none yet; 11, none yet; 12, none to move.

Marienville, Pa., July 19.

H. H. HARP.

The honey crop in Tennessee will average just about half of a normal yield, although the quality is better than last year. There has been no report of honey-dew this season. Prices are firmer than at this time last year, with prospects for an advance.

Franklin, Tenn., July 22.

J. M. BUCHANAN.

About one-fifth of crop. Extremely rainy until last week; very dark and unmerchable. Poor location at best here for honey.

Chattanooga, Tenn., July 2.

G. E. LEAVITT.

1, excellent; 2, favorable; 3, neither; 4, clover, phenomenal; basswood, poor; mullein and thistle too good; 5, about double; 6, a full crop already, and more too; 7, beyond comparison; 8, comb only; 9, colorless, the clover; mullein, dark amber, I think; 10, 11, 15 cts.; some are offering 12½, but are not getting any; 12, grocers are taking it because it is so good; but the weather is too warm for consumers.

Hightate Springs, Vt., July 14.

C. A. SIBLEY.

No honey of consequence to date; but if weather is favorable there is a good prospect for a good fall flow.

Hot Springs, Va., July 21.

S. D. RUTHERFORD.

1, good; 2, favorable; 3, wet; 4, very bad; 6, comparatively nothing; 7, about one-fifth; 8, comb; 9, white; 10, none on market; 11, 15 cts.; 12, would sell readily at 15 cts.

Emory, Va., July 21.

B. F. CAMPBELL.

Here are conditions of bees in this neighborhood: 1, fine; 2, favorable; 3, no; 4, good; 5, much better; 6, about 30 per cent; 7, none last year from my bees in frame hives; 8, mostly or all comb honey; 9, white and amber; 10, about 12½; 11, I don't know; am selling mine at 15; but mine is comb honey; 12, mine is, don't know about others. Am now in the midst of mountain-mint flow. White clover is still blooming. Honey this year is of a very rich quality. I don't suppose I have a colony that will need feeding this fall.

Rapidan, Va., July 21.

G. H. LATHAM.

1, good; 2, unfavorable; 3, extremely wet; 4, 5, 6, 7, all harvested; ½ crop; 8, comb; 9, red and white; basswood and poplar; 10, sold consumer, 15 cts.; 11, all sold; 12, never, in good year, enough to supply demand.

Miami, W. Va., July 20.

JOHN D. THOMAS.

I have not extracted a pound yet, but some have a little surplus from clover. Buckwheat is not sprouting. This entire county is dried up. No honey-dew here.

Mauston, Wis., July 20.

F. WILCOX.

1, good; hives full of bees; 2, very unfavorable; 3, from the worst and most prolonged drouth in 59 years; 4, in general, very poor; about half a crop; 5, the best colony my son had last year gave 300 lbs.; the best one this year, 130 lbs.; 6, none; 7, last year about 70 lbs. average; this year, 40; 8, farmers produce comb mostly; we, extracted; 9, white, and thick as glue; can hardly strain it; 10, not settled yet; 11, do not know; 12, none moving yet.

Wausau, Wis., July 22.

G. A. LUNDE.

In the meantime we request our readers to continue sending in their reports.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

BEST CLOVER FLOW I ever knew hit drouth cut it short July 10. Will rain start it up again? If not, there will be about two-thirds of a full crop.

S. FARRINGTON, does not your plan of preventing after-swarms by enclosing brood without any bees, p. 466, cause the death of the unsealed brood? You are wasting time to cut out queen-cells. The bees would see to that.

LE RUCHER BELGE, 52, copies a clipping saying that a hive-ventilator has been invented which saves the bees from fanning at the entrance, allowing them to go to the fields, increasing thus very much the harvest!

DR. CARTON, *L'Apiculteur*, 134, says the common notion that the food of the wax-worm is chiefly nitrogenous is all wrong. It is chiefly wax, perhaps altogether in some cases, as when working on sections. Metalnikoff's researches have shown that in the body of the bee-moth larva, especially in its blood, there is contained in abundance a very active ferment capable of digesting all waxy bodies.

DR. BONNEY, after your page or more of proof that a non-swarmling race is impossible, is it not a fact that some bees swarm twice as much as others? The Dadants don't average one swarm from ten colonies. Now, if the kind of bees, or the size of hive, or any thing else can make so much difference as that, I believe continued effort may make still more difference, and I believe in going after that still greater difference, even if it breaks your law all to flinders.

R. PINCOT reports, *L'Apiculteur*, 195, that he had a swarm weighing 6 kilos (13½ lbs.), which left in the hive 94,220 cells filled with brood and eggs. So the queen, in the preceding 21 days, had laid an average of 4486 eggs a day. If she kept that up for twice as long, and if each bee lived 6 weeks, that would make 188,412 bees in the colony! [It has generally been stated in our text-books that a queen was able to lay as many as 3000 eggs a day. Possibly we had better revise the statement, and say that she *may* lay nearly 5000.—ED.]

"EXPLAIN how he (Stewart) is square up against Alexander," p. 440. Certainly. Mr. Stewart gets the bees to clean out the combs, and Mr. Alexander was very vehement that the bees should not clean out a comb affected by American foul brood. He says, GLEANINGS, 1907, page 166, "I don't think that, up to the present time, there has ever been a comb that was affected by American foul brood cured of that disease. . . . The reason why American foul brood has never been cleaned out of a comb is because a larva that died from that disease is so much

like glue that the bees can not remove it in its soft state; and before it dries down. . . . becomes a part of the comb itself, where it can not be . . . removed by the bees."

[It is true that there is an apparent conflict between Stewart and Alexander; but you will notice that Stewart brings out the point that the colonies must be *very strong* in order to clean out foul brood—that an *ordinary* stock will not do it. He makes these colonies still stronger by stocking up over some of the combs already affected. When the good brood hatches out, a large portion of young bees is soon available. Alexander, on the other hand, apparently referred to ordinary colonies; and we all know that an ordinary colony will not remove the dead matter from the combs of American foul brood.

In this connection, perhaps it might be well to state that, if an extra-powerful colony removes the dead matter of American foul brood from the infected combs, so that said combs will allow good brood to be reared in them, there is quite a possibility, and even a probability, that, in a few years after, foul brood will develop again.—ED.]

G. C. GREINER, p. 446, thinks the B. Taylor plan of getting unfinished sections cleaned out by the bees much better than the Miller plan. Each is best in its own place. I always use the Taylor plan when I can; that is, when I have enough bait sections to be cleaned out at one time. I spread the supers of sections over the shop cellar, and when all ready I open the cellar door for the bees. That's better than to have them outdoors, as a shower can do no harm. But if only a dozen supers are to be cleaned out by a large apiary the Taylor plan will chew the sections into little bits, and the Miller plan is away ahead. I do not find that the small passages excite the bees to stinging quite as much as the Taylor plan. [Now that European and American foul brood are spreading so rapidly over the country, it may be questioned whether it is wise to let all the bees in an apiary rob out a stack of wet combs from extracting or partly filled sections in this wholesale and indiscriminate way. If there were disease in one or more of the hives, nothing could spread it more effectually throughout the entire yard and other small apiaries in the vicinity than this wholesale robbing-out scheme.

For the benefit of beginners, foul brood or no foul brood, we ought to say that this scheme of cleaning up supers makes bees very cross for the time being. In a yard located near a common highway, or a line fence where stock is feeding or horses are working, it would be very risky to practice this clean-out plan. No one should attempt it except expert bee-keepers who *know what they are doing and the possible consequences*. Dr. Miller has been having European foul brood, and he probably will not take any chance of spreading what little disease he may have in his yard by having his supers robbed out either by the Taylor plan or by his own.—ED.]

Bee-keeping in Southern California

BY MRS. H. G. ACKLIN, GLENDORA, CAL.

I am just beginning to get accustomed to hearing honey computed by the ton instead of by the pound. On asking a bee-keeper about his honey crop the answer comes quickly, "Oh! I took off — tons at the first extracting, and expect — tons next time." I sometimes wonder how a bee-keeper with a dozen colonies would answer.



I attended the Orange County Bee-keepers' Club meeting on July 2, and daughter and I were the only ladies present. Now, something is radically wrong; but I do not know where to locate that something. Bee-keepers, coax your wives to attend the conventions with you. Tell them you will take a lunch for dinner that night; tell them—but you all know what is best to say when you wish your wives to go somewhere with you. If you all do your duty in this respect the conventions will be more interesting. At the same time you must not forget to be present yourselves, as many of you did at the Santa Ana meeting.



NOTES FROM THE LOS ANGELES COUNTY CLUB MEETING.

The Los Angeles County Bee-keepers' Club convened in the Chamber of Commerce, Los Angeles, on the afternoon of June 4. Considering the infancy of the organization the meeting was well attended—probably half as many being present as the State convention called out. Interest and enthusiasm never waned for a moment; and even after adjournment people were loath to leave the hall. Several ladies were present, which always augurs well for the bee-keeping interests of a community.

W. R. Wiggins, Pres., and D. J. Shultis, Sec., were at their posts; and to the efforts of these two gentlemen is due, largely, the success of the convention. Mr. George B. De Sellem, Apiary Inspector of Los Angeles Co., was also present, giving helpful suggestions and advice when called on; also taking suggestions himself with a good grace. According to reports there is much work to be done along his line in this county. But just imagine the size of Los Angeles County! Mr. De Sellem expects co-operation in his work from all bee-keepers in his district.

Many subjects were discussed, preëminent among them being foul brood, which is always the case, I believe, when that problem has to be met. One gentleman has proven to his own satisfaction that the queen is responsible for that dread disease, and tried so hard to impress the convention with his arguments and conclusions that it

became amusing and somewhat pathetic. Two papers were read, Mr. Brazen discussing "Counteracting Effects of Excessive Swarming," and Mr. Lind's subject was "Managing Bees in Dry Weather."

Initiative steps were taken regarding the entertainment of the members of the State organization, which meets in Los Angeles next winter—arrangements to be perfected at our next meeting, Sept. 3.

A trolley ride to Soldier's Home and a 3½-mile walk brought the writer to the apiary of Mr. C. C. Schubert, Sepelveda Canyon, Santa Monica Mts. The first part of the way led over high ground from which could be seen adjoining towns and the grand old Pacific; but as the road led us into the canyon it was like being encompassed about by gigantic walls on three sides. Bees were in evidence all the way, the roadsides along the cultivated fields being covered with wild mustard. On entering the canyon the little hummers were not as easily seen as heard, as the undergrowth is dense. There were many varieties of wild flowers in bloom, but not all accessible to the honey-bee. Some of the canyon apiaries are not as easily approached as one might imagine. This one had a padlocked gate half a mile or so from the bees. On nearing the apiary the sound reminded one of swarming time; but as we stepped out of the dense growth into the open space no swarms were visible. Mr. and Mrs. Schubert were there, but more for an outing than otherwise, as their bees were doing practically nothing. Those big empty honey-tanks had a hungry look, while many unused supers were stacked up, and the 275 colonies were barely making a living. Not enough rainfall in the early spring, and hot winds from off the desert, are the prime causes of this honey-dearth. The winds dried up the sages, which would otherwise have given part of a crop. We expected to find Mr. Schubert in the midst of extracting, and every thing bustle and hurry; so imagine our surprise when we found such quietness. This apiary may redeem itself later on, when the wild alfalfa and sumac come into bloom. Forage-plants are numerous on these small mountains. Buckthorn and wild lilac—both shrubs—come on in February, while the sages, *Cercocarpus sagrada*, wild alfalfa, wild buckwheat, sumac, elder, and many other varieties of bloom are later. All of these plants, except the sages, yield an inferior honey. This particular canyon must be the paradise of swift lizards. They were gliding from under our feet along the road, and were even in the tent. While watching for flies, which they snap up with lightning-like rapidity, they let us touch them with a stick without moving. Mr. Schubert claims they eat bees also. Fortunately for us our genial host and his good wife were going home that evening, so we rode back to the car line. [In our Sept. 1st issue we expect to have some engravings showing Mr. Schubert's apiary.—Ed.]

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

HONEY PROSPECTS.

From present indications there will be little surplus gathered in Northern Colorado this year. Late freezes, lack of water for irrigation, and grasshoppers, are the three main causes. The first growth of alfalfa has yielded scarcely any thing; and the colonies at this writing, July 7, have less than a pound each of stores. For about a month the bees have just held their own. Sweet clover and the second crop of alfalfa are the only available sources of honey, and unless these furnish a good flow soon the bees will have to be fed for their winter stores. So far this is the most discouraging season Colorado bee-keepers have ever experienced. Colonies are strong, and would soon be swarming if we could just have a honey-flow.

Bees in the Arkansas Valley in South-eastern Colorado are reported to be doing well, and it is not probable that the conditions in the northern part of the State are general.



BEES AS INVENTORS OF THE HIVE.

We are told that bees first appeared in the tropics, where they built their combs on the limbs of trees; but on finding out the advantages of more protection they took up their abode in hollow trees, crevices, in the rocks, etc. This change in manner of living shows a high form of animal intelligence, and is a high form of adaptive ability. Whether the bees took up the living in trees and rocks while in the tropics or developed this adaptive trait after moving into colder regions is hard to determine. We often see bees living out of doors with but very slight protection. A swarm of bees at Delta came from a hive in an apiary and lit upon a clump of sweet clover; and instead of leaving for a distant home they built their comb right there in the open with but very scant protection from the weather. They were entirely overlooked by the apiarist, and were not found till about Christmas. A few bees were still living, but the queen had disappeared. During the summer the leaves of the sweet clover protected the combs from the sun's rays, and they were melted but little. Apparently the knowledge of the need of protection from the weather is an acquired character of the bee; and when outside conditions are very favorable she will forget all that the past has taught her and will revert to old methods that succeed only in the tropical "first home" of the species. Certainly bees that build combs in a sweet-clover bush have a very hazy notion of the rigors of winter. As a rule they seem to have a pretty good idea of protection during the winter; but whether they know just the

nature of it would be hard to determine. Certainly what they know from instinct is often lost when they revert to a still more primitive instinct by building in the open air. If we take this view of the acquirement of the trait of the bee in seeking the shelter of a tree or rock we shall have to say that the bee herself is the inventor of the hive. Did she do this in the tropics to gain for herself shelter from rain, the sun's rays, and perhaps from other insects? Or did she have to encounter the rigors of northern winters before she saw the advantage of more protection? We shall have to admit that the bee is somewhat of an inventor; for is it not a sign of adaptive and inventive genius that she will take the comb foundation we give them and build comb upon it?



SWEET CLOVER.

Some of the possibilities of sweet clover as a honey-plant and forage crop may be gained from the report of the conditions in some of our mountain cañons. The streams from which our irrigation water comes flow out of the cañons; and in order to get the water as high as possible on the plains it is taken some distance up the cañon and carried in ditches and flumes around the sides of the cañons and thence out on to the high ground of the plains to be irrigated. Sweet clover has been sown along these ditches by bee-keepers, and the seed has not only started up a fine growth along the ditch-banks, but wherever the banks have overflowed the sweet clover has gained a firm stand. Further than this, the clover has followed up some of the damp ravines and along the main beds of the larger streams, making an abundance of fine bee pasturage; but, what is of more real value, it enhanced the worth of this waste ground in the mountains as a pasture for cattle. Many cattle are now kept in the mountains, and the feed is good most of the year; but the addition of sweet clover to the pasturage makes it doubly valuable. In time it is quite probable that these mountain sweet-clover pastures may be profitable fields for the bee-keeper.

Here is a further high endorsement of sweet clover as a ration for stock—sheep this time. It is especially valuable, as it comes from Prof. Morton, of the Colorado Agricultural College, an expert on the feeding of sheep. I clip what he says from an article of his in *Ranch and Range*.

Many people think sweet clover is useless, but they are mistaken. Not only will stock pasture upon it, but they will eat the hay from it readily if it is cut early and well cured. The writer has fattened lambs upon sweet-clover hay and corn, and found the combination almost equal to alfalfa hay and corn. I distinctly remember the first time I fed sweet-clover hay. I had a bunch of range lambs upon native hay. I threw in a forkful of sweet-clover hay that was very stemmy, and bleached. The lambs started for it; and as soon as they got a taste of it they almost piled on top of one another in their eagerness for it. It was amusing to see a sixty-pound lamb start in on a stem as big as one's little finger, and chew at it until he finished it. Previous to that time I was somewhat skeptical as to the value of sweet-clover hay, but I became convinced.

Notes from Canada

By R. F. HOLTERMANN

125 CARLOADS OF HONEY ANNUALLY.

I must confess I feel curious to see the invoices for such a large purchase of honey by one concern, page 404, July 1.

FROSTED ALFALFA.

Wesley Foster reports frosted alfalfa in Colorado in the middle of May. We had the same here when other clovers did not appear to be damaged.

LAYING WORKERS.

Endorsing the statement of Dr. C. C. Miller, page 404, Holy Land and Cyprian bees, I believe, generally develop laying workers much sooner than Italian, Carniolan, and black bees; yet laying workers *will* develop among the three last-named varieties.

COLONIES STRONG TOO EARLY.

So Dr. Miller, on page 404, suggests that Doolittle and Holtermann should "settle the question whether a colony can be too strong May 1." Well, if I should be spared that long I am willing to prepare an article for GLEANINGS defending my views, and let friend Doolittle do the same; and as Dr. Miller appears to be "on the fence," let him umpire the debate.

DOES THE QUEEN DESTROY QUEEN-CELLS?

Many times I have heard the statement made that the queen destroys cells which might produce rival queens. My youngest son, Glenelg, lately stocked an observatory hive with a comb of brood, bees, and several queen-cells. After the first cell hatched, the *bees*, not the queen, tore a hole in the side of the cell. I must confess that all I know about it is hearsay.

SOUR HONEY.

Supposing sour honey came in contact with well-ripened honey, could the germs of fermentation effectually act on thick well-ripened honey, or would the honey first have to become thin before it would ferment? Of course, I want to make it impossible for the honey to absorb moisture from the atmosphere until it becomes thin. Now, do not let some one answer this question by telling me it is unwise to run the risk.

ITALIANS SWARM MORE THAN BLACKS.

Under this heading, W. C. Mollett, page 286, May 1, has an article. There may be some peculiarity of locality which makes this the case with Mr. Mollett; but my experience, provided room is given to the bees when they need it, would incline me to be-

lieve the Italian bees are *less* inclined to swarm than the blacks. In the term "blacks" in this case I would include the Carniolan bees.

THE SEASON.

Reports from various sources indicate that in Canada generally the bees have not been in the best condition to take advantage of the opportunity for nectar-gathering; and unless the flow is prolonged by recent rains the yield per colony will not be as great as last year. My best colonies have so far not done as well as last year, and the average yield per colony is not likely to be as great. I believe that my bees were in as good condition as last year; but the flow has not been quite as good.

ATMOSPHERE AND NECTAR SECRETION.

Mrs. H. G. Acklin, page 405, appears to doubt that atmospheric conditions have any thing to do with a good or poor honey crop in California. I can not speak for California; but in Canada, to which so many of our United States neighbors are now coming, the atmosphere may spoil the best prospects otherwise for a good honey crop. On Sunday, July 3, the atmosphere was muggy, and the bees worked with a will; then somewhere there was a clearing storm, and, though we had no rain, on Monday morning all was quiet among the bees, the atmospheric conditions having changed. Before the middle of the week we had high temperature and a moist atmosphere, and nectar secretion and gathering was again the order of the day.

THE SPREAD OF FOUL BROOD.

"If Mr. Woodley be correct in blaming the present generation—and his words seem to imply that—for the wholesale spreading of bee diseases, then by all means let us in this country stop and hand down the industry to our sons and daughters free from this reproach cast upon the present generation by Mr. Woodley." So says the *British Bee Journal*, page 189. In my estimation there is no doubt that modern methods of bee-keeping tend to the spread of foul brood. Frequent manipulations of the brood-chamber, robbing, due to the exposure of brood and extracting-combs, the honey-extractor, the taking of brood and combs from one stock and giving them to another, and the length of time combs are now kept when compared with the "brimstone" method of getting honey, all these tend to the increase of foul brood. Again, our present facilities for transportation of honey and bees tend to the spread of this disease, just as it has tended to the spread of weeds, insect pests, fungi, and parasites. In my estimation there is a system of bee-keeping suitable for an expert who devotes his whole time to the business which it is unwise to graft on to a person who has neither the time nor experience to develop with success.

Conversations with Doolittle

At Borodino

A HARD BUT VICTORIOUS FIGHT WITH ROBBERS.

After what you said in the last issue I thought I should be able to get along without allowing my bees to rob again; but in spite of all I could do they got started on two colonies. Have you ever had any experience with robbers besides that mentioned?

Some years ago I had a siege of robbing that was so bad that I feared the whole apiary would be ruined. It was during a hot time in August, when there was no nectar coming in from the fields, and I could not open a hive, not even one of my queen-rearing nuclei, without robber-bees swooping down like a swarm on to the combs. If there is any thing in the business that makes a man feel like giving up it is having robbers hovering all day long about every hive in the yard that they think there is a possible chance to get into. The heat, day after day, was intense—just the condition to put all the vim possible into a robber. At that time I was often sending out from twenty to forty queens a day, and you can imagine the situation was enough to give me the blues.

The matter of the queens was the most difficult of all, for I could not lift the cover from a nucleus before a host of marauders were ready to pile in on to the weak little colony hardly able to defend itself when not disturbed.

My wife asked me why I did not use the bee-tent; so the next morning I had it all ready before the sun was up; and after breakfast I started to put up queens that should have been sent three days before. I no sooner had a nucleus open than the robbers came on as before; but the tent held them away from the combs till it seemed as though there was a small swarm about it. However, I could row go on putting up queens, while without a tent I could not work at all except before sunrise and after sunset—the most unpleasant time of the whole day to work with bees, especially during a honey-dearth.

I thought the tent would stop all the trouble, for it held the robbers at bay while the hive was open and the queen was being caged; but after closing the hive and removing the tent, the bees from this nucleus which had been kept outside by the tent, flocked in at the entrance; and as the guards had left their posts while I had been at work, the robbers, of course, went in with them. A fight always ensued, which, in the case of the weaker nuclei, would have resulted in victory for the robbers had I not promptly closed the entrances. Never before had I seen robbers so determined and so cunning. They would hover all day long at the entrance of a nucleus hive, five and even ten at a time, and alight with fanning wings as

tired bees do after being away a long time, and in this way they would get past the guard. On this occasion I saw the robbers doing something that I had never seen before, nor have I seen it since. When some of the guards caught a robber, other robbers would catch hold also and tug away at the legs and wings until the bee got away, when they would whirl around as if looking for another robber, and then run into the hive. In this way they worried the guards of the smaller nuclei and kept me on the jump all the while.

But finally I learned how to overcome the difficulty. This is not new to the older readers, for I have mentioned it before. By carefully watching I found that, when a robber slipped by the tired outside guard, that robber would be led out by one of the inside guards. This set me to thinking, the result of which was a change of arrangements of every nucleus and weak colony. Up to this time the entrance to each hive was directly in front of the comb. Now, as fast as I opened a nucleus hive I took the frame having the most honey and set it clear to the opposite side of the hive from the entrance; then the frame having the next greatest amount, a bee-space from it; and the frame having the most brood in it next to that (I generally use three frames to a nucleus), and then put in a division-board and closed the hive, leaving the entrance on one side, while the nucleus of three combs was on the other side. If a robber succeeded in slipping by both the outside and inside guards it still had to travel over a foot of space all along which were scattered guards ready to seize it; and if the robber did get by all these guards through stratagem, it first came to the division-board and then to a comb of brood which is far better protected from bees than any other part of the hive. The result was that, although robber bees still hovered around, no colonies were robbed out, and no nuclei or weak colonies since that time have ever been robbed out if there were enough bees to protect the combs at all.

How to Protect Empty Combs from Moths.

I intend to stack up brood-chambers filled with empty combs, six stories high, making all the cracks as tight as possible, for the purpose of fumigating with carbon bisulphide. Please tell me about how much of the liquid I need to use at each application, and how often I shall need to renew it to insure the best results.

Paducah, Ky.

WM. JAMES.

[After fumigating, if you leave the combs stacked up just as they are, making sure that all the joints are tight, there is probably no reason why you would need to repeat the work, provided that your carbon bisulphide is as strong as it should be. If you get it in the sealed package, and do not let it lie open on the shelf for some time, one treatment, we think, would be sufficient. Place about half a pint of the liquid in a very shallow dish over each stack of frames, covering every thing up on top, so that no air can get in. The gas is heavier than air, and falls, therefore completely filling the whole tier of bodies.

To be on the safe side it might be well to make an examination of one of the sets of frames after 48 hours, and if you see any signs of life at all in the shape of moths that are not dead, repeat the fumigation.—ED.]

General Correspondence

THE FLIGHT OF QUEENS AND DRONES.

BY SAMUEL SIMMINS.

There are many apiarists who claim that their breeding-yards are isolated to a great extent, and some believe that a radius of from one-half to one mile free from other bees will provide a clear flight for fertilization, in most cases by the drones of the same yard. However, for securing vitality and increased productiveness in a strain of bees the above is not the point of most importance to be considered. There is nothing short of a mountain range that will restrict a strong-winged queen to half a mile, and many a hardy queen will extend her perambulations from two to three miles. This distance we must about double in anticipation of far-off drones meeting the queens. The same rule applies to the flight of the drones, and it is only by insuring hardy, virile males in great numbers that one can rely upon securing a large percentage of queens mated as desired within a reasonable distance of the apiary.

THE OTHER SIDE OF THE QUESTION.

But suppose a breeder claims to get most of his queens mated correctly where there are many mongrel bees within a mile of his yard. It is quite possible that this fact explains that the queens may not be hardy or strong-winged, and, above all, if his drones do not soon change the color and markings of those mongrel bees within the mile radius this would seem to be a proof also that the breeder is wasting the time and money of those who purchase bees and queens of such a strain.

It would be a difficult matter for me to find a stray colony of native bees or mongrels within a mile of my own apiary, which apiary is also surrounded by high trees; but I find that my drones have made an impression upon native bees at a distance of $1\frac{1}{2}$ to 2 miles from an apiary; but even with crowds of such drones flying, I can not claim to be quite free from occasional mismated queens, and I am well aware that those drones reared are capable of flying five miles or more if occasion required.

Consequently, if one is using or testing a queen whose daughters almost invariably are mated correctly, and apparently within a short distance of the apiary, he should consider seriously whether these queens may not be delicate or weak in wing power. This being the case, no matter how prolific her daughters may be, it is possible they will not exhibit in their worker progeny that longevity, stamina, and industry required in a good strain of honey-gatherers.

I have now presented both sides of the question, showing that an apiary is not always strictly isolated simply because the

owner considers that he secures correct mating. He may, instead, be merely perpetuating a weak strain of queens and bees that will never show any decided improvement toward extra results in honey-gathering, though he may secure high color (another sign of weakness), and prolific breeders. It may be taken for granted that, the more yellow the workers produced, the more delicate and the more useless they are; but a clearly defined three-banded bee may certainly be produced that will be equal to any for honey-production. As soon, however, as the color of the workers runs—one band into the other—such as five-banded or golden-to-the-tip workers, the breeder has exceeded his legitimate vocation, and is offering that which is a practically useless article.

There are many apiarists who have invested in beautiful extra-golden queens only to find that their honey-yields are reduced to an unprofitable margin, and these enthusiasts are often inclined to disregard the superior advantages of the darker Alpine Italians. Even the latter, as is well known, require a great deal of selection and care expended on them before the highest type of hustlers can be secured, while the same careful process is necessary before one can insure uniformity in color of queens, and it frequently varies from orange to black among those imported.

DO BEES CARRY EGGS?

In further reference to this subject I notice the reported case of a queen-cell being found above excluder zinc, page 710, Nov. 15. Your correspondent does not say he allowed that cell to hatch. It may have been from an egg deposited by a worker, but it is unfortunate for the theory under consideration that Mr. Rigg did not await the proof.

In your footnote, after repeating your former impression relating to the supposed egg-carrying propensities of bees you refer to apparent proofs that hopelessly queenless colonies have developed a genuine queen of a race different from the bees of the hive. I should be among the first to admit any substantial proof that bees do carry or steal eggs; but it has not happened in my own somewhat lengthy experience, though I have found many cases that might be mistaken for such occurrences.

If the progressive stages have actually been observed from the egg onward to the final development of a perfect queen in a hopelessly queenless colony, then, of course, one must admit the exception as referred to in your footnote, page 781, December 15. We must not forget, however, that it is a common occurrence for a young queen failing to notice her own hive or nucleus to enter a queenless colony after successfully mating. Is it not possible, therefore, that some may have jumped to erroneous conclusions in such cases? The capped queen (?) cell may have continued up to the supposed hatching-point, and then the advent of the wandering queen would apparently afford the required proof that bees do steal eggs.

Heathfield, England.

HOW TO PRODUCE A TRULY FANCY GRADE OF EXTRACTED HONEY.

BY LEON C. WHEELER.

It has been said that the first requisite for fine extracted honey is new combs; but while this might do for some, I go a step further and use nothing but foundation. There is not a comb in my yard over three or four years old, and yet there is a very noticeable difference both in color and flavor between the honey taken from these combs and that taken from combs just built. I believe honey is often rushed into drawn combs so fast that it is capped over before it has time to evaporate thoroughly, as it should.

Some may wonder whether it is not pretty expensive to use so much foundation. I figure in this way. Full sheets of thin brood foundation for a ten-frame hive will cost about 55 cts. About 35 lbs. of honey can be extracted from such a hive when full, which, if handled right, will bring from three to five cents per pound more than the average grades of honey. Suppose this difference to be three cents, we have \$1.05 to overbalance the 55 cts. for the foundation. Then we still have the combs left, which may be used for two or three years for the standard grade of honey. In putting these frames of foundation in the hive I alternate them with drawn combs, and I find that the bees lose very little time in drawing them out and filling them.

When I extract I separate these newly drawn combs from the others, and extract them by themselves. Then I again sort all of the combs left, taking out any which, by any possible chance, might have a trace of darker honey in them, and also even some of the darker combs which contain nothing but light honey, but which may have colored the honey slightly. This process insures very fine honey for the next best grade, and the combs left are now extracted and the honey sold around home to those who wish a fair grade of honey without paying so much for it.

There is one more advantage in this way of handling honey. Every time any of the extra-fine honey is sold it immediately begins doing free advertising.

Barryton, Mich.

[There is probably no question that the very finest honey is secured from virgin combs; but it seems to us that there is some room for argument as to how far it pays to carry out this plan. Perhaps not all bee-keepers would be able to get three cents a pound more for honey produced in this way than that produced in good average drawn combs. Then, further, some honey would be consumed in the process of drawing out the foundation. Virgin combs, moreover, are difficult to extract without breaking. When visiting a bee-keeper recently we saw beautiful clover honey, light in color and exquisite in flavor, that was

being extracted from old brood-combs that were nearly black.

We are not bringing up these arguments to dispute the points made by our correspondent, but simply to show that there may be a difference of opinion. We should be glad to hear from others on this point.—ED.]

A BEGINNER'S FIRST SEASON.

BY C. C. PARKHURST.

After becoming interested in bee-keeping I subscribed for GLEANINGS, then secured the A B C of Bee Culture. I first bought two Danzenbaker hives complete in the flat, with smoker, veil, gloves, etc. I had arranged with a farmer to let me have the first swarm that came off, so one of my new hives was left with this farmer, in which the swarm could be placed when it issued. About the close of the white honey-flow I received word that the bees were ready for me. This one colony I succeeded in getting in good condition for winter by stimulative feeding, as the season of 1907 was a poor one, there being only a very light fall flow. I will not go into details to tell how many times I had this hive open with the frames leaned up against it at different angles, or how I came very near losing some of the combs by exposing them to the hot sun too long.

I packed the colony for winter by taking out part of the frames and placing cushions at the sides, made of forest leaves. Then I put an empty super above the brood-chamber, which I filled with leaves. The entrance was contracted to a space $\frac{3}{4} \times 3$ inches, with a board leaning against it. As the winter was mild the bees had numerous cleansing flights, and came through the winter dry, clean, and ready for business. They were carrying in some pollen on the 27th of March, and, during fruit-bloom, cast a swarm. This was the spring of 1908.

Having been successful so far I wanted more bees, so I bought five colonies in old Langstroth hives of a farmer who had more than he wanted to keep. I brought these home one evening about the 20th of April and placed them on their new stands. About this time I ordered ten divisible-brood-chamber hives with the idea of transferring the bees from the old hives. When these came I nailed them up and put in full sheets of foundation, both in the brood-frames and in the sections, using a full-top starter, and also a narrow bottom starter in the sections, according to Dr. Miller's plan.

Before fruit-bloom, which was late on account of the backward spring, I hunted up the queens in all the colonies and clipped their wings; and it was no small undertaking on account of the old crooked combs, some being built across from one frame to another. At this time I did a very foolish thing. I took a frame of brood from each old hive and cut out a piece to fit in the new frames, putting just one frame of brood in

each new hive, placing the new hive on a queen-excluder over the old hive, with the queen released on the frame of brood after her wings had been clipped. I did this, thinking I would get the bees at work above. I was very much mistaken, however, as there was no honey coming in, and what I did practically stopped egg-laying, the foundation above being left untouched. I did not know what was the matter, and I began to think that these bees were a very stubborn lot; but I left them in this way until during fruit-bloom, when all the brood below had hatched, and then I took a brood-comb, put it in a shallow hive on a bottom-board at the old stand, filling up the hive with full sheets of foundation. I then took the section that the bees had been occupying with partly drawn combs at this time, and put on top of this first one and drove the bees from the old hive into these two bodies thus prepared. I did this with each of the old colonies, and then closed up the old hive so the bees would not rob out the honey left in the combs. The bees went to work with great energy, although they were not as strong in numbers as they should have been. This experience, then, was rather expensive.

The colonies now built up rapidly, as the weather was favorable, and only a few days between fruit-bloom and locust-bloom. The locust furnished some honey, and was shortly followed by clover, which yielded abundantly. As soon as the clover flow began I raised up the top brood story and placed comb-honey supers between the two stories. They were left in this way for two days, so that work would be started nicely in the sections, and then the supers were put on top of the two brood-sections. Some of the sections were badly plugged with pollen, and had to be sold for 2 cts. less; but on the whole I secured a nice lot of honey that many people praised highly.

The flow was of long duration; and when some colonies slowed down in the work and commenced loafing I removed the supers without disturbing the bees in them; then I smoked most of the bees down out of the top brood-section, so as to be sure not to get the queen; then this top section was set aside to be used for increase later, and supers put back on the lower sections. After this I blew a few puffs of smoke at the entrance to drive the bees up off the bottom-boards, and then lifted off the whole lot and placed brood sections with full sheets of foundation on the bottom-boards, putting back the former lower brood sections and supers over them. More smoke was then blown in at the entrances, and the work was done. In this way I induced each colony to give a good account of itself, and this seemed to check swarming at the same time, as I had but two swarms during the clover-flow, and all had increased to rousing colonies.

My first swarm I united with a colony that was not doing very satisfactory work in the sections, and the bees were accepted

without any fighting. My plan of uniting was to shake out a few bees from each lot, mix them up, and allow them to run in together. My other swarm was hived on a new stand. At each instance the queens were easily found, running about near the hive, as they had been clipped.

At the end of the white honey-flow I had eleven colonies. About that time I sent for six untested Italian queens, as my bees were blacks or hybrids, and three of these were used to replace old queens, and the other three used for making increase. To make the increase I took one brood section from the strongest colonies, being careful not to get the queens, and gave these strong colonies a section filled with full sheets of foundation instead. The new colonies were smoked to cause the bees to mark their new location, and a queen was introduced to each in the mailing-cage. The entrance of each new hive was contracted to a small space to prevent robbing. The queens were accepted with one exception, and I bought a strong colony from a neighbor and united it with this queenless colony in the fall. This time I placed a sheet of paper between the two bodies and drove the bees from the hive I had bought into the lower section.

The new colonies and the divided colonies were left mostly to themselves after dividing until the buckwheat flow, which gave some surplus. Then super room was given to each that I thought was strong enough. After the buckwheat the next main source of supply was the goldenrod, which was abundant in many fields, and furnished considerable honey. This did not cease entirely until nearly the first of October. As we had a late fall, with no killing frost up to this time, I decided the bees were storing no more honey, and so I removed all the supers with Porter bee-escapes. After removing the honey, I sorted, scraped, and packed it as soon as convenient and placed it on the market. After figuring up I found I had taken off just 581 sections of marketable honey that were sold at 12 to 15 cts. each, with the exception of some that were given away, and also what we used ourselves and what we kept for winter. Honey given away to neighbors is a very good investment, as such neighbors tell others about it, and the number of customers is materially increased.

After taking off the last honey I commenced preparations for packing for the cold weather. I took three frames out of each top brood-section and put chaff cushions at the sides. Then on top I put an empty super, and filled it with chaff or leaves. All the hives were very full of honey and pollen, there being in some of them more pollen than I thought the bees would ever need. I did not want to leave so much in the hives, but did not know how to get rid of it.

In the future I intend trying some easier method of packing, as it is too much work to make cushions and pack them. Then the frames that are taken out must be stored away and looked after as well as the other

inside fixtures and the supers. However, the next spring the bees were in good condition.

Garrettsville, Ohio.

HOW MANY SETS OF EXTRACTING-COMBS ARE NEEDED PER COLONY?

A Discussion of Some of the Plans in the Alexander Book.

BY HARRY LATHROP.

Early this year I purchased the Alexander book, and read it and reread it carefully. On the whole I think it is one of the most valuable books on practical bee-keeping that I ever got hold of; but in some points it needs severe criticism. His instructions regarding spring feeding, production of comb honey by using the feeders to supplement the flow from the fields by feeding back thinned honey at night, and his directions for making increase, are very valuable. On the other hand, he advocates operating an apiary for the production of extracted honey by the use of one extracting-super per colony. I have advocated abundance of store combs and the tiering-up plan. I should like to discuss this point because it does not seem possible, in a white-clover locality, to secure anywhere near the maximum yield by Mr. Alexander's method—at least if well-ripened honey is desired. Take the situation in my yard at present, for instance. The colonies wintered well and got a fine start in March and early part of April. Then during the cold weather of April and May, and on to the opening of white clover, I fed carefully so that, when the white clover came out in bloom, the colonies were strong in bees with brood-chambers full of brood and no honey. I promptly put on every hive one set of extracting-combs. The honey, in such a case, comes in with a rush. Now, I can tell unerringly just when a colony needs an additional set of combs by the little bunch of bees that gather on the front of the hive. As soon as I notice this I give another super under the first and next to the excluder. The first super is two-thirds full, and the bees are beginning to seal along the tops of the combs. But that honey is not ready to extract; it is not ripe, and if I had no other set of combs to furnish room I could not wait a week for the first super of honey to be finished, without losing heavily. When the upper super is ready to extract, the lower one will be nearly full; and the usual plan is to extract the upper one and return the combs, placing them in turn next to the brood-chamber. I have had a long experience in manipulating these extracting-combs, and I must say experience has taught me that I want plenty of them.

Suppose a bee-keeper has a lot of colonies with one super each, just about ready to extract. He goes to each hive and selects three of the ripest combs and extracts them, thinking that this will give the bees room for a

few days until he can get around to extract the remaining combs. A few hives are treated differently, in that the whole set is extracted. Now, when he comes around the next time he finds that the bees that had a full set of empty combs have filled them as full as the others have filled their three combs, thus showing a heavy loss on the part of the latter. I have three sets of full-depth extracting-combs for each working colony. I think I could get along with two, but would never try to get along with one as did Mr. Alexander.

There are two things that Mr. Alexander did that we don't do; he practically overstocked his field so that the honey would not come in so fast, and he sold his honey mostly in bulk to dealers in the city. I sell mine direct to consumers—have worked up a good reputation, and do not want to lose it by extracting green honey, which I should have to do if I tried to run an extracting-yard with only set of store combs per colony, or else lose a large part of the crop. Mr. Alexander's yield was mostly from buckwheat, of which we have very little. His situation was different from many, and most of his advice is so valuable that, in some other things, he might mislead any one with a location similar to ours. There are a few other men who advocate extracting honey before it is ripe, and resorting to artificial methods of ripening; but they are being voted down by a large majority of the practical honey-producers of the country.

ALLOWING THE COLONIES TO REQUEEN THEMSELVES.

Another question I should like to touch on: Mr. Alexander and some others advocate purchasing or rearing queens for wholesale requeening. In our apiary we practice clipping the queens each spring. When clipping-time comes we find that only about ten per cent of the queens have clipped wings. Does not this indicate that the queens were superseded the previous autumn? It is claimed that the best queens are produced by superseding; then why buy queens in order to avoid having queens over two years old? Strange that some things stand out as being of such great importance to some practical men, which things do not seem to be any part of the problem of successful honey production to others. I like to have young vigorous queens of good breeding, and do purchase some fine queens from the breeders of best reputation; but when it comes to a good honey year, the blacks and hybrids of the yard, especially those persistent blacks, are right there with the goods, producing as much honey as the best-bred stock.

Bridgeport, Wis., June 23.

Silverhull ahead of Japanese Buckwheat for Honey.

Japanese buckwheat is not reported as the equal of silverhull. I have sown silverhull with good results. The bees do not work on the Japanese. I intend to use the silverhull entirely.

Lincolnton, Me.

FRED BREWSTER.



CITY APIARY OF CHARLES H. GOODELL, WORCESTER, MASS.

KEEPING BEES IN A CITY.

BY CHARLES H. GOODELL.

I live in a city of nearly 150,000 people. My lot is 120 feet in front, 150 feet deep, and about 50 feet across the back. I have kept bees in the rear part of it for many years, and also have kept several colonies summer and winter in a gable in my attic. There are gardens all around. One can see in the picture how near the houses are, and also the neighbor who is hoeing corn just beyond the fence which forms the boundary between us.

It is of the double-brood-chamber hives that I write especially. They are made up of regular deep supers, with the cover of a wintering-case on top for a shade-board. The one on the right had two bodies filled with ten frames each, and three supers, and from it I took 71 lbs. of honey; the other, at the left, had two bodies filled with frames and two supers, and from that I took 46 full sections. The season for surplus was short and poor.

I put a gray Carniolan queen in the upper story, and an Italian queen in the lower story of the hive at the right, with an excluder between them, and the black and yellow bees worked together throughout the hive during the summer. I hatched a yellow queen in the upper story of the hive on the left of the picture, and then put her in the lower chamber to be mated. I put paper between the two chambers, with an entrance for both stories, until she was laying, to keep the virgin queen from going through the excluder to the other queen. I had two queens in each hive after July 1.

I am a lawyer, and studying or experimenting with bees has been my diversion. I also organized and am now secretary of the Worcester County Bee-keepers' Association, the largest and most influential body

of the kind in New England. Our president, Mr. John L. Byard, recently carried a queen-cell in his pocket from Chesterfield, N. H., to his home in Marlborough, Mass., where it hatched in due course.

Mr. O. F. Fuller, of Blackstone, one of our members, has established the Fuller system of queen-rearing at the Massachusetts Agricultural College at Amherst. By his system he raises queens in one half of a ten-frame Langstroth hive, while the queen is laying regularly, and the workers are rearing brood in the other half and storing surplus in the super above, they having access to the whole hive through queen-excluding zinc placed vertically in the middle, and being fed abundantly when there is no honey-flow.

I am using the double-brood-chamber hives again this year. Mr. Fuller recently sent me some queen-cells by mail. I was not in my office when they were delivered, and the postman threw them over the transom. I put one in my queen-rearing nucleus; and next morning I found a handsome queen had hatched. I put another in the upper story of a hive, with excluder and wire cloth between that and the lower story in which the queen is, and that cell also hatched out in good time. We have demonstrated that queen-cells will hatch after being sent for some distance and subjected to rough usage in the mails.

Worcester, Mass., July 11.

[We are fearful that your experiments in sending queen-cells by mail will end disastrously, for unless the weather is extremely warm there is the greatest danger that the queens will become chilled so that they will not develop perfectly. Our Mr. Bain says that, since the wings form about the last, the queen is likely to emerge without wings at all if the cell is subjected to a cooler temperature than that of the hive.—ED.]



DR. E. F. PHILLIPS INSTRUCTING THE NURSERY INSPECTORS OF OHIO IN THE ART OF BEE INSPECTION.

By the new State law the State Entomologist is the bee-inspector who, with his deputies, has charge of the work throughout the State.

FOUL-BROOD INSPECTORS AT WORK IN OHIO.

BY E. R. ROOT.

As our readers probably know, Prof. N. E. Shaw, State Entomologist in the Department of Agriculture, Columbus, Ohio, is now our State foul-brood inspector under the new law. He already had a corps of six or seven men doing nursery-inspection work, and these have since been trained to do inspection work among the bees.

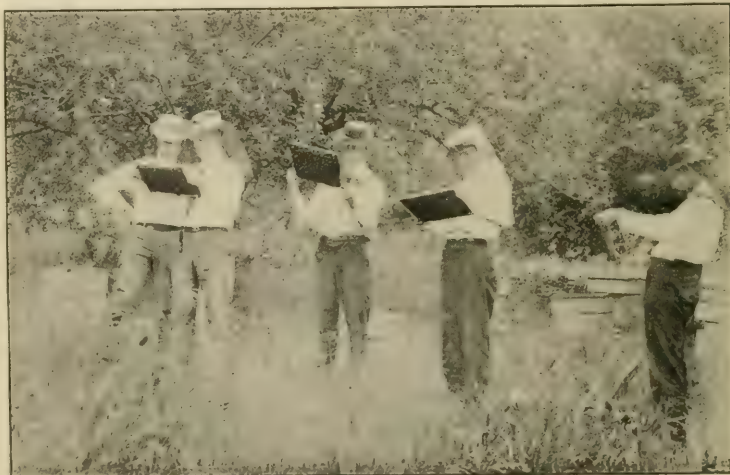
Some few weeks ago, State Inspector Shaw, along with his deputies, met with Dr. E. F. Phillips, of the Bureau of Entomology, Washington, D. C., at Medina. Dr. Phillips took them through our bee-yards and showed them colonies in normal condition. We then drove in an automobile to some points about 25 miles distant

that we heard were infected with disease. We found a couple of yards where American foul brood was making fearful havoc. While Dr. Phillips was giving his instructions how to diagnose and treat, we took occasion to use the camera, and the subjoined views show the inspectors at work.

Prof. Shaw and his deputies are university-trained men, and it was not difficult for Dr. Phillips to instruct them in the way of diagnosing bee diseases, for they readily "caught on."

Since that time they have been busy in various sections of the State. There are some six or seven of them, and when it is understood that they are doing nursery-inspection work as well as bee-disease work one can readily see the economy to the State at

large. There is no reason in the world why the function of nursery and bee-inspection work can not be combined in one man, or, as in this case, in several of them. One does not require to have a practical knowledge of the art of handling bees to be an inspector; but under an expert like Dr. Phillips, especially if he is a college man, he will readily catch on to some of the marked symptoms of disease. In any event, all doubtful specimens of brood are



STUDYING THE SYMPTOMS OF THE DISEASE.

referred to the Bureau of Entomology for examination.

Ohio probably has one of the best foul-brood laws of any State in the Union. A law that provides for an appropriation of only \$500 and one inspector can not accomplish a great deal. Every State really ought to have a corps of seven or eight men. It reduces railway travel and hotel bills when the functions of the two lines of inspection work are combined in one.

Indiana has an excellent law, probably as good as Ohio. Several other States are beginning to appreciate the value and the importance of making the State Entomologist, foul-brood inspector. The State Entomologist, a trained scientist to begin with, has at his command stenographers, clerks, and an office, and it is possible for him to keep a record of all disease-infected areas and to give advice by letter as well as in person. It is our judgment that all laws in the different States should be modeled somewhat after the one of Ohio and Indiana. They were originally drafted by Dr. E. F. Phillips, who, after a very careful study of the general conditions, decided that bee-inspection work naturally rested with the State Entomologist.

SHALLOW VS. FULL-DEPTH FRAMES.

Is the Divisible-brood-chamber Hive all that has been Recommended?

BY T. P. ROBINSON.

Although I have the highest esteem for Mr. Louis H. Scholl, I have very little use for shallow supers, at present at least. Louis and I are good friends, but I think it is amusing to see how careful he is not to tell us how long it takes him to can one thousand pounds of honey ready for shipment. Taking the honey off the hive is the smallest part of the work. Cutting it from the frames, putting it into cans ready for shipment, and then fixing the supers for further use is where the rub comes.

We have some of the shallow supers, and consider them a perfect nuisance. The bees have a way of sticking them up to a fearful degree, and just as soon as we begin on them the extractor practically runs dry; in other words, we get honey only about half as fast as with the full-depth frames, for it takes just as long to handle a shallow frame as a



MAKING SURE OF SOME DOUBTFUL CASES.

deep one; and the man with hired labor, who values time, can not fool with these shallow combs.

I have a record to submit to our "6 ft. 2" brother, which modesty has kept me from making public until now, but for argument's sake I will mention it. One year during the latter part of August we were taking all the surplus honey from our hives. We had gone through all the apiaries except one that was fourteen miles away, and we reached this yard with our equipment and four helpers, Mrs. Robinson being one of them, whose particular work was the uncapping. I took a man in the yard with me to help, and to haul the honey to the tent; and in a short time we had the tent full of honey in full-depth frames and all hands started at the extracting. In seven and one-half hours the whole yard was extracted clean, all supers back on the hives, the bees in first-class working order, the honey canned, crated, and ready for shipment, with nothing left to do except to go home; 3500 pounds of extracted honey was the result, besides the cappings, which were heavy with honey. We could have done the job in six hours; but we had only a two-frame extractor, and we could not all work to advantage. The uncapping was done with a cold Bingham knife. We would not use a hot knife in our part of Texas.

My experience with the shallow frames convinces me that they are all right for the man who has a good deal of time to fool away, but that they are not suited for the busy man. I could never take care of my 500 colonies, and at the same time operate my farm, cultivating 150 acres of land myself, if I used shallow frames. To bother with a sectional hive when it comes to finding a queen is out of the question altogether



A COUPLE OF AMERICAN BEE-HIVES AFTER THE PATTERN OF THOSE PATENTED AND MANUFACTURED BY H. A. KING ABOUT 45 YEARS AGO.

with me. Then, handling 10,000 shallow frames instead of 5000 deep ones, as in my case, is again not to be thought of. It is true that we have to brush the bees off the full-depth frames; but we get all the bees, and it takes just a little more time for the whole job. We have smoked bees out of shallow supers, as Mr. Scholl describes; but the work is not satisfactory, as there are many bees left in the supers to crawl out in the honey-house and get into every thing. I bought an apiary which contained shallow frames. It is still in my possession, and I intend to make wax of the combs and kindling-wood of the frames this winter.

If one is running for comb honey, and wishes to use only strips of foundation, and no wire, the shallow frames might be all right; but I can not sell comb honey to any appreciable extent; and when I do sell it I produce it over full-depth frames on full sheets of foundation with one and two wires to the frames.

Bartlett, Texas.

THE H. A. KING AMERICAN BEE-HIVE.

BY A. I. ROOT.

When I first became interested in bees and bee culture, nearly 50 years ago, if I remember correctly my first truant swarm was put into a Langstroth hive. Afterward, however, I ran across H. A. King's "Bee-keeper's Text-book." I finally paid a visit to his hive-factory at Nevada, Ohio, which I described briefly on page 705, Nov. 15, last year. After talking with Mr. King, and

reading his text-book, I felt so well satisfied at that time that the American hive was something later than the Langstroth, and an improvement on it, that I purchased the right and manufactured forty or fifty hives like those shown in the cut. Now, there are some good things about that old American hive. The frames were at fixed distances when the movable side was put in place and securely buttoned up. Of course, the frames could not be removed without taking out the movable sides. The large entrance shown in the cut for use in hot weather, with the entrance-block taken out, was a very good thing; and the auger-holes above for an entrance in winter seemed to be a pretty good thing also. But when I began to write for the old *American Bee Journal*, and became acquainted with its editor, Samuel Wagner, he succeeded in convincing me that the Langstroth hive was not only more largely in use than any other hive, but also that it was more likely the one to be settled down on as the standard in the future. The arguments he presented, besides some from father Langstroth, after I had become acquainted with him, were so convincing that I cut all of my combs out of the American hive and transferred them back again to Langstroth frames.* The years that have passed since that time have demonstrated the soundness of the judgment of both Langstroth and Wagner. Considerable credit is also due to H. A. King for having introduced

* By referring to back volumes of the *American Bee Journal* for 1866 I find I tested both American and Langstroth hives side by side, and the latter gave the most comb honey (in boxes) every time.

improved bee culture largely in many places, and also for having conducted for many years a valuable periodical called the *Bee-keepers' Magazine*.

Ernest, in some of his foul-brood-inspection rambles, ran on to the two hives shown in the picture, at the residence of Mr. J. N. Delong, of Homerville, Medina Co., Ohio.

A NEW AUTOMATIC CAN-FILLER.

A Practical Device for Filling Five-gallon Cans Without Shutting off the Stream of Honey,

BY W. C. EVANS.

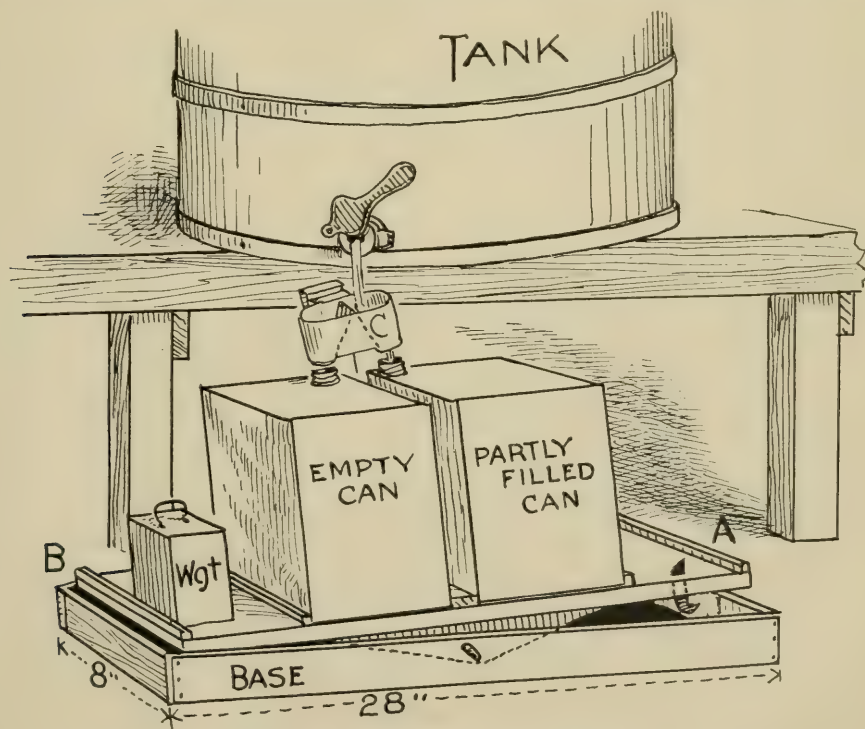
Those who have any amount of honey to run into five-gallon cans will find my automatic device very useful. I have no patent on any part of my outfit, and any one who wishes may make one of them; or, better still, get one made at some factory where the parts can be built more accurately. The capacity of the filler is limited only by the size of the faucet or gate in the honey-tank, as well as by the openings in the cans to be filled. I have canned as much as 800 lbs. per hour without spilling a drop of honey on the floor.

The drawings will make the operation of the device clear. The stream of honey is transferred from one can to another without

closing the gate. One can stands on each side of the pivot of a balanced platform. When one can is full it sinks down, thus raising the empty one so that the stream of honey is deflected by means of the double funnel into this empty can. The full can may now be removed, for a steel catch holds this end of the platform down, and an empty one is put in its place. The weight is now transferred to this end of the platform, which weight automatically releases the iron catch at that end, so that, when the can on the other end is full, this first end may rise as before, thus deflecting again the stream of honey. All the attendant has to do is to change the weight from one end of the board to the other and replace the full cans by empty ones.

If necessary an alarm-bell may be easily attached to ring when one can contains the full weight of honey. The bell will continue to ring while the honey is filling the other can, or until the full can is removed, an empty one put in its place, and the weight transferred to the other end of the board. There is no chance for running the honey over, for the attendant may replace the first full can by an empty one any time while the second can is filling.

I use a low wide funnel (not shown) on each can, each funnel being provided with a cone-shaped screen that extends well down into it. The construction of the funnel is such



THE EVANS AUTOMATIC CAN-FILLER.

The stream of honey runs all the time. When one can is full it sinks down, bringing the other half of the double funnel under the gate.

that there is no chance for flies or bees to get into the can underneath the funnel, and the screens prevent them from getting in with the honey. Of course, all honey should be well strained before it reaches these funnels. I use the Alexander strainer, and like it very much.

By changing the size of the weight it is possible to weigh and fill any size of cans. A weight of concrete 8×8×6 inches will weigh from 22 to 24 pounds, which is about the right size to use when filling 60-lb. cans. It should be noted that the weight is further out toward the end of the board than the can of honey, and for this reason it is not necessary to use a weight that equals the weight of a can of honey.

The tilting board, when both cans are removed, should just balance when the base is on a level floor. If one end were higher than the other, the upright piece that supports the double funnel would lean toward the lower end, and therefore cause one can to be a little light while the other one would be correspondingly heavy.

I mention this for the reason that one of my friends who was using a filler that I made for him had trouble because the floor was not level. An average floor is all right.

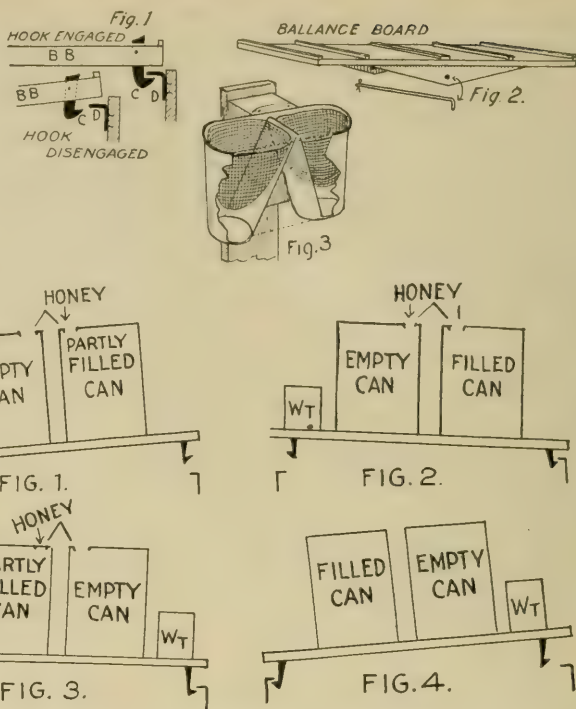
Fort Collins, Colo.

[If one has need of an automatic filler, it seems to us that this one fills the bill exactly. It is surprisingly simple, and the few parts would not easily get out of order. We are frank to admit that it is the most satisfactory outfit of its kind that we have seen.—Ed.]

THE ALEXANDER PLAN FOR CURING EUROPEAN FOUL BROOD.

BY ALFRED L. HARTL.

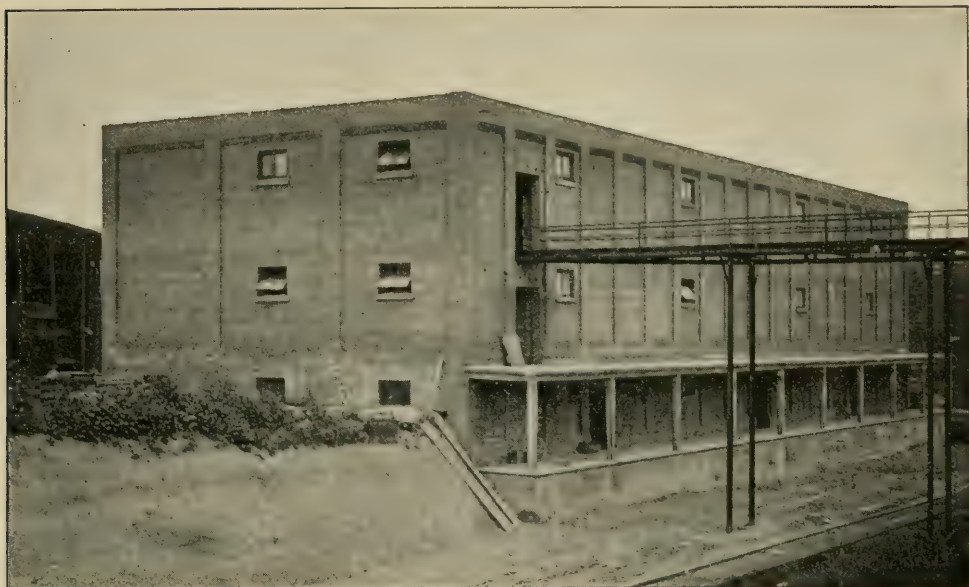
I have been reading those articles on the Alexander plan for curing European foul brood; but as this disease is such a very serious one I can hardly believe that a badly infected colony can be successfully cured by a period of queenlessness. Some writers are positive that it effects a cure, but there are many things in the treatment that do not look reasonable.



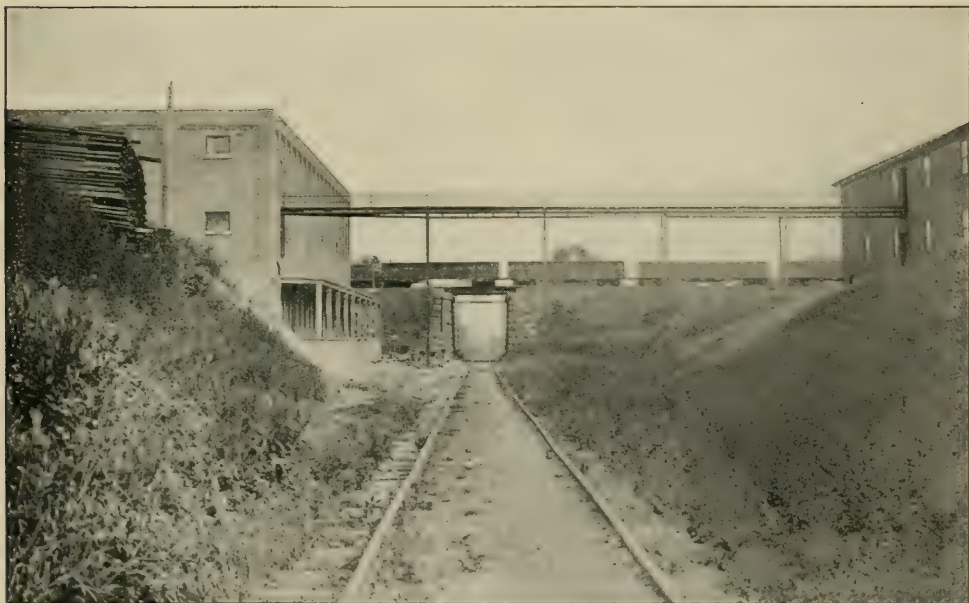
In Fig. 1 the weight holds the hook away from the catch so that, when the can at the right is full and the weight is overbalanced, the left can will rise and the right hook will engage the catch. The honey now runs into the left can, FIG. 2. The full can on the right may now be removed, for the right catch holds that end of the platform down, and an empty can put in its place. The weight is next transferred to the right end, releasing the catch at the right, FIG. 3. As the can on the left becomes full it sinks down so that the honey again runs into the empty can on the right. Meanwhile the hook on the left has engaged the catch, FIG. 4. The replacing of the full can on the left with an empty one, and the transferring of the weight to the left brings the apparatus back to the position shown in Fig. 1.

I have had no experience with European foul brood; but it seems to me that, if the Alexander treatment is a success, the disease would never have existed, for the bees would naturally cure themselves every year. All these writers agree that, in the period of queenlessness, since no eggs are laid, and there are no larvæ to feed, the bees have time to clean every cell in the brood area, since in the 27 days all healthy brood emerges. Now, does not this same thing happen every spring? The bees stop brood-rearing every fall, and begin again in the spring; and the colonies are not only broodless 27 days, but often for two months, even here in the South. The queen is present, but she lays no eggs. When spring comes, the bees set to work cleaning the cells, and they not only clean them half way, but they polish them besides. A few days later the queen starts to lay in these polished cells, and she will not deposit one egg in a cell that is not perfectly clean. Now, does not this fulfill every requirement? Yet the disease is spreading over all the States.

There is another point in this treatment that does not look reasonable in this plan for curing disease. Every one who has had



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See Special Notices.

any experience with American or European foul brood agrees that the disease is distributed by germs in the honey or by the combs. Many bee-keepers have reported buying honey on the open market and infecting every colony in the yard. This is certainly proof enough to show that danger lurks in the honey. With the queenless plan for treating this disease, is it possible to expect a cure if there are ten or fifteen pounds of infected honey in the hive?

If a colony is dequeened during the honey-flow, as soon as the young bees emerge from the cells such cells will be at once filled with honey, and also those from which the dead larvæ were removed. This certainly means that the honey will contain the germs of the disease.

Elmendorf, Texas.

MATING QUEENS FROM UPPER STORIES.

BY C. S. HARRIS.

In the June 15th issue, page 391, I note a question from Arthur M. Wheeler, Jr., in regard to replacing an old queen with a young one mated from an upper story. Dr. Miller replies, but is not sure of the result. I can say that, unless it is a case where locality cuts a figure, it will work all right. For twelve or fifteen years I have been rearing queens in upper stories, in some degree, although not particularly for the purpose desired by Mr. Wheeler. I have always found these queens accepted in any part of the hive just as readily as the old queen; and, still further, I find it is not even necessary that they be reared in the upper story of the hive, for I can take a queen from elsewhere, introduce her in an upper story over a single thickness of wire netting, within a few days remove the netting, and as soon as

the bees from below have freely intermingled with those above the queen, if transferred upon a frame of brood they can be safely placed below if the old queen is at the same time removed. I have never tried running the two queens together, being satisfied that, in such a case, one or both would be killed in the fight which would be sure to ensue.

I give the colony queen the range of two ten-frame bodies, and over these I place another full body with a queen-excluder both above and below it, the young queen being reared in still another full body on top of this. The flight-hole may be either at the side or rear.

Except when a queen is to be mated, I raise this top super, or body, a bee-space at the rear to allow air and flight; but as my supers used for this purpose have an excluder attached to the bottom I find it necessary to close this opening when a virgin is ready to make her flight. With a loose excluder the super might be raised a bee-space above it, and no other entrance would be necessary.

Under favorable conditions a queen can be reared and mated from this upper story without the use of any thing but the queen-excluding metal between it and the lower story; but I find one thickness of wire netting in addition to the excluder is necessary much of the time when a queen is to be mated. As soon as she is laying, this wire netting may be removed.

I have been rearing queens for a number of years, and my cells are accepted and built out in the top story of a hive having two queens, one in the lower and one in the top-most. In this way I secure extra strong colonies, and always have brood when and where I want it. This plan as I use it gives me fine cells with less work than any method I have ever tried or seen used by others.

Holly Hill, Fla.

THE EIGHT VS. TEN FRAME HIVES.

Sectional Brood-chambers.

BY J. J. WILDER.

Differences of opinion arise too often among our apicultural authorities for the greatest good to our industry. Especially is this true on the question of the size of brood-chambers and supers. It now seems that some particular hive or super will win out against all others; and as a bee-keeper, and supply-dealer as well, I long to see the time when this will take place. The sentiment seems to favor the ten-frame hive, because it is larger. This is one point in its favor, but it is not large enough to furnish sufficient room for the average queens in our apiaries. Then, too, the ten-frame does not admit of as rapid handling of frames as does the eight-frame hive, because it is not large enough to hold ten frames properly, especially after the usual coat of propolis is deposited on the inside fixtures. Moreover, the outside frames are too close to the sides of the hive, and the bees often neglect this outside comb surface or extend brace-combs from them to the hive-sides, resulting in mutilated combs. If the center-combs are removed for an examination of the condition of the brood-nest, many bees are crushed on account of lack of room between end-bars. Take it all in all, the ten-frame hives are too large for nine frames in the brood-chamber, and too small for ten frames for rapid manipulation on the part of the bee-keeper who produces honey in a wholesale way and must, therefore, inspect the brood-chamber many times during the season.

The eight-frame hives provide just the proper amount of room for the eight frames when the follower is removed. Any frame can be quickly removed without killing the bees, and the outside combs are well occupied, and free from brace-combs.

This leads me to mention what I regard as the best brood-nest for the production of comb, extracted, or bulk comb honey, either on a wholesale plan or otherwise—for the South or any other locality. I know that differences of opinion will exist; but I am sure that, when my arrangement is put to actual test for successive years, more bee-keepers will agree that an eight-frame full-depth hive-body and a shallow extracting-super on top, each containing the proper size and number of frames, is the most ideal arrangement. It is more natural for bees to work up than sidewise; and it is just as natural for the queen to follow with her work. There is not much doing in the production of bees until the queen moves up out of her lower quarters, and the shallow frames above give just about the right amount of additional egg-laying room.

In most localities here in the South we have several months of swarming to contend with. If the shallow brood-chamber above is not allowed to be filled with honey (and it rarely does get filled, with a queen

of average prolificness), there is no danger of swarming until this upper brood-chamber is too full of brood. Then, since all signs of swarming will first appear in the upper combs, which can quickly be detected by tipping up the shallow body (many times there will be no sign of swarming any other place in the hive), this arrangement, therefore, brings us as near to a non-swarming hive as economy or labor will allow.

Sectional brood-chambers are strongly advocated by some of our leading bee-keepers, and they have some advantages over single brood-chambers; but the arrangement that I have mentioned combines the good qualities of both, and overcomes some of the following difficulties as well. The shallow frames used under sectional brood-chambers are too shallow to allow both brood and honey, and consequently there is no rim of honey around the brood as in deeper combs, and the queens are constantly going above, seeking more commodious quarters, thus deserting the lower combs that contain no honey, and which have to be constantly removed and placed on top or the use of them will be lost. Then, too, there being no honey around the brood, excessive robbing may be the result, so that the bee-keeper will have to feed or allow the bees to starve. Very often it is necessary to cut up the brood-nest by adding a super; but this is almost sure to excite swarming and make too many brace-combs that have to be cleaned up. Lastly, with the sectional hive the queens have to crawl over too many sticks, and search in too many out-of-the-way corners for cells for the very best results.

Cordele, Ga.

THE BEE'S SENSE OF SMELL.

Is it Not this Sense Alone that Guides the Bee to the Source of Nectar?

BY WM. M. WHITNEY.

Mr. Raleigh Thompson's article on p. 124, Feb. 15, is interesting, as it indicates the acuteness of the sense of smell of the honey-bee. It never has been my belief that bees sought their field of labor by the sense of sight in the first instance. Like all other winged insects that I know any thing about, except, possibly, the locust family, they seek their food through the sense of smell by flying against the wind. I believe the composite eye is chiefly valuable in the field to guide them in their labors among the flowers near by, as otherwise they would miss many blossoms, the scent being wafted away by the wind, and to mark their location by the observance of nearby objects; and that, the eyes being set in a triangular form in the forehead, they form the headlight, so to speak, to blaze the way; and the sidelights, with their thousands of facets, take cognizance of surrounding objects on

their way to and from localities, enabling them by the aid of memory to make a bee-line as we call it.

Old bee-hunters recognize this faculty in the bees when they burn a bit of comb to attract them to the honey-box. I never heard of a bouquet of flowers being used appealing to the sight of the bee for that purpose. Yes, I believe it is the sense of smell that enables them to seek their food, as it is of other winged insects; and it is the composite eye that guides them to flowers near by, which otherwise might be missed, just as it is the composite eye of the common house-fly that enables it to see nearby objects. The fly has no use for long-distance sight.

In testing the keenness of the sense of smell in the honey-bee a number of years ago I had the following experience: One day after extracting I took a comb several rods from the yard in the direction the wind was gently moving, away from the yard, you will observe, and set it on the ground against a post and awaited results. The bees were flying in this direction to a large patch of sweet clover about a mile away. In less than five minutes my curiosity was rewarded by seeing a bee about a rod away, and about half a foot above the lawn, coming slowly against the wind in a zigzag course, as though hunting for something it had scented, till it found the comb. I walked still further away and saw others coming—not from the yard, but toward it, and several rods away, hunting in the same manner as the first, till they found the comb. Soon a line was established between the comb and yard, when they came and went on what we call a bee-line.

Now, I think these bees were on their way to the clover-field, but, scenting the comb somewhere on the way, they turned back to find the source.

It has been a very common thing with me to observe bees flying along in a zigzag course just above the lawn, hunting for drops of honey that had dripped from the burr-comb of a super which had been carried to the honey-house several rods away; and the manner of search was very much the same as that of a hunting dog in search of the track of its prey. I really think that there is no animal with keener sense of smell than the honey-bee.

I have sometimes almost felt like reproaching myself for cruelty in experiments to test the accuracy of the theory that the antennæ are the organs of the sense of smell, to say nothing of hearing and feeling.

Just in proportion to the clipping of the antennæ, the workers lost all desire, apparently, to perform any of the functions of their species, even to feeding themselves, though honey was within easy reach. Some may say that such an experiment furnishes no evidence that this is the organ of smell. At any rate, it satisfied me that, apparently, every sense but seeing had been destroyed.

If the sense of smell is the chief means

employed in finding nectar, as I believe it is, how important, then, that it be extremely acute! Donning the old bee-yard suit that has been hanging up for six months will call them to me on any warm day in early spring, not because they remember the old clothes, but it's the lingering scent of honey, just as it is the wax and honey smell on the old bottom-board, or on the window-sill which we sometimes read about, that attracts them. Were every bee in the hive that stood on the old stand in the fall killed, plenty of bees could still be seen flying about the old stand in early spring.

Bees' memory is about three days long. On a division being made, the new colony may be opened anywhere in the yard at the end of that time without the fear of their returning to the old stand. An experiment along this line of testing the memory of bees was made a few years ago with one of your ten-frame observation hives which I have had in my room, as follows: A wire-screen cover was put over the frames, leaving a space of $1\frac{1}{2}$ inches above the top-bars. The bees were fed regularly for several days by trailing over the screen very thick honey. After a few times feeding, they would gather on the under side of the screen as soon as I approached the hive, expecting to be fed, just as pigs or chickens will congregate at their accustomed place to be fed. But on failing to feed them for three days they did not make their appearance on my approach to the hive as before. On resuming the feeding, the same experience was repeated; hence I conclude that their memory is short. Also, from careful observations, I conclude that their sight is not telescopic. If this view is not correct, bees might be expected to return to the old stand, though removed five miles away.

Batavia, Illinois.

A Lucrative Lay.

BY THOMAS H. ROGERS.

A hen will lay one egg a day—
One day in every three;
Ten dozen eggs a year, we'll say,
Each hen shells out for me.

But she's not in't for laying eggs
Compared with buzzy bee
That lays a thousand eggs a day—
Two thousand—sometimes three.

For size I'll take my old hen's eggs;
For numbers, those of bee;
And thus I'll pile my wealth so fast
That cost won't worry me.

I'll do this stunt—combine the size
And numbers—don't you see?
I'll have just one good egg-machine—
A cross 'twixt hen and bee.

Cambridge, Mass.

Heads of Grain

from Different Fields

Does More than One Virgin Ever Leave the Hive at One Time for a Wedding-flight?

On April 17 I unpacked my colonies and clipped their queens. I had them packed on the Orton plan, as illustrated in the A B C book, and on that date they had from six to nine frames of brood, and the hives were literally full of bees.

On May 7 I found a good-sized swarm near my yard; and as I had clipped all my queens I congratulated myself that bees from somewhere else had swarmed, for I was sure mine could not. While hiving them I saw the queen and clipped her. Going to the hive two hours later I found the bees balling on the alighting-board. She was dead, and I was about to shake the swarm in front of some of the hives when I noticed another queen. I did not shake the bees there, but gave them a stand in the yard. I afterward noticed three dead queens in front of one of my hives. I opened this hive and found a fine bright queen there, and her wings were whole. There were empty and vacated queen-cells all through the hives.

Now, were these queens all virgins? I found only sealed brood. I think the old mother was lost when I clipped her wings two weeks before; but why did not the first queen hatched destroy the rest? Why did the swarm ball one and not the other when both came from the same hive?

Niagara Falls, N. Y., May 9. J. ROY LINCOLN.

[With nearly every after-swarm, and sometimes with first swarms, there will be one or more virgin queens. There may be a dozen or even two dozen—depending on circumstances. One of our correspondents once said that, in the case of an after-swarm, it seemed to be *all* queens.

After the swarm is hived it is then a question of the survival of the fittest. The strongest of the virgins, or it may be the one that gets the best death-grip, will kill off the others; the experience, therefore, that you relate is nothing unusual. Sometimes the bees take a hand by balling one or more of the surplus queens. They are much more inclined to do so immediately after she has been clipped, especially if they have other queens in a hive that has not been tainted by human fingers.

It is possibly true that, when you touched the old queen in the act of clipping of the colony that had the virgins, the odor of the queen had been changed so that they balled and killed her. They then raised a number of cells, and when one or more of the queens went out for a flight the bees followed them. This very often happens. In answer to your question, we may say that one or more queens may leave a hive and be mated at approximately the same time. Moreover, a single virgin may take several wedding-flights and possibly meet a drone more than once. On this last point we have well-authenticated cases on record.—ED.]

A Bee-keeper who Found Solid Tires Not Satisfactory.

I note on page 189, March 15, that H. G. Quirin has an idea that a solid-tire automobile would be ideal for a bee-keeper. To any one who contemplates buying a solid-tire auto, especially a bee-keeper, I would say, *don't*. I bought an auto four seasons ago fitted with solid tires, and have known intimately several who have had them, and we discussed our troubles together. After the first season we changed to pneumatic tires. Solid tires are noisy, hard to ride on, hard on the machine, and cost more in the end, than pneumatic tires, through trouble and breakage.

The constant jar caused by solid tires causes crystallization of the steel in various important parts of the car where the most strain occurs, and sooner or later they will break, with the liability of causing serious accident, should one happen to be going at high speed at the time. Our particular trouble was breaking of the steering knuckles, which was really dangerous. There was always something getting loose.

A car fitted with good pneumatic tires, of dimen-

sions to correspond with the weight of the car, will give the best service in the long run, for less money, and for a bee-keeper will carry his bees and honey with greater safety than solid tires can ever be made to do it.

As to the high-wheeled buggy, they are no better. There were four buggy autos sold in this vicinity last season, and every one of them had broken axles in from six weeks to three months. The higher the wheel the greater the strain at the shoulder in the axle.

Belgrade, Montana.

C. A. KINSEY.

[It is not quite clear to us whether you refer to solid tires on low wheels or on high buggy-type wheels. Solid tires on the former are not a success; but we have been led to believe that solid tires on high buggy-wheels, large enough in diameter to roll quietly over obstructions, and not bump squarely against them, give good results. We quite agree with you that pneumatic tires on ordinary roads are far superior; but they are the meanest thing that was ever invented in slippery or in deep mud. Pneumatic tires never ought to be used on any thing except paved streets or on good roads. Where ruts are deep, roads rough, we would advise the high buggy-type wheels, solid tires. If this advice is not correct we shall be pleased to hear from those who have had a contrary experience.—ED.]

Robbing Induced by Giving Chunk Honey to a Weak Colony.

I have just had an interesting but annoying experience with robbing. The day was cool and wet, and the bees were within doors, so I thought it would be safe to put a few bits of broken comb and a little waste honey from the dining-table into the upper apartment of an old-fashioned box hive where the colony needed a little aid. Passing the hive an hour or so later I saw that robbers had scented the honey already, and were attacking the colony. There was nothing to do but to shut the entrance tightly, which I did at once.

About 5:30 P.M. I saw that the grass and weeds around the front of the hive were sprinkled with bees. They appeared to be young bees, as they were small and inactive, but they clung very tightly to the points of the goldenrod leaves. I broke off the leaves, the bees clinging fast, and laid bees and all on the entrance-board, when the bees left the weeds and crawled inside. I searched for half an hour, or perhaps an hour, before I got them all gathered up and laid at their entrance. At this time the robbers had become discouraged in their effort to find the entrance, and the way was clear for these enfeebled bees to enter.

It would seem, from all the circumstances, that the young bees had left the hive for a trial flight, before the robbing began; then about the time I shut the entrance they had become chilled and were returning; but finding the entrance shut, and a horde of robbers buzzing around their home, they had settled down on the weeds instead of alighting on their entrance-board. Am I right in this explanation?

I have learned a lesson in bee-feeding, and it is this: If I have comb honey to feed to a weak hive, give it to them after dark, when it is impossible for robbing to take place. Possibly a very rainy day would do. Be that as it may, the loss of time and the young bees that were destroyed were worth much more than the waste honey which I saved from the pigns and fed to the bees only to make so much mischief.

How are empty combs to be fastened into sections for placing in supers? I am holding them for an instant on a hot stove, then sticking them fast to the section. Is there a better way?

I have three old colonies, one in a box hive, one in a store-box, one in an ancient form of movable-comb hive. Could these be divided and transferred into six modern movable-comb hives? Would it be safe for me, with neither experience nor apparatus, to undertake the job? If it seems possible to multiply the three hives to six, is it necessary for me to buy three queens?

J. C. M. JOHNSTON.
New Wilmington, Pa., July 1.

[It is a little risky to give chunk or broken honey to a weak colony at any time. While the atmosphere might have been a little chilly, yet the smell of broken honey is likely to attract robbers. As you say, it is a good deal better to feed a weak colony at night, although it can be done in the daytime if the entrance is sufficiently contracted.

Empty combs can be fastened in sections by applying them momentarily to the top of the stove. It would be much cleaner and handier to use a hot plate over a little lamp stove. As a general thing it is not advisable to put full-drawn combs into sections from the previous season. They merely serve as good baits to induce the bees to go above.

It would be perfectly feasible for you to transfer the colonies referred to into modern frame hives. We would advise you to follow the directions in any of our standard text-books, especially the A B C and X Y Z of Bee Culture. See "Transferring."

In making increase you can buy queens, for in so doing you get stronger colonies for winter. If the increase is made early in the summer you can rear your own queens, but in the meantime you will lose valuable time.—ED.]

More about Sweet Clover, etc.

I note there is considerable said in GLEANINGS about sweet clover—a pest as I have always considered it (if it is the same), of which there is a great abundance here. It is thick along the side of every road around my place; and, considering it a pest, I have tried to keep pulled up every plant found inside the fence—not that I knew any thing worse about it than that all our farmers pronounced it a pest, and were trying to eradicate it, and that I never saw an animal of any kind that would eat a spear of it at any season, no matter how hungry, though it is the first thing but buckeye that is big and green enough to furnish a bite in the spring.

I note you say, "If your crop won't eat it, let me know." This country is completely overrun with it—acres and acres of it going to waste; but it is surely good bee pasture.

The story goes in these parts that some 40 years ago there was an aged Methodist preacher by the name of Salisbury who came from England, and he was a bee-keeper as well. He settled at Comargo, Coles Co., Ill., a station some 40 miles west of here on the Springfield branch of the C., H. & D. R. R. He had a small quantity of seed sent him from old England that he scattered along the highways to furnish pasture for his bees.

I keep some 20 stands of bees, and have about an acre of fine thrifty alfalfa just across the fence from them, and have so had it for three years. It is in full bloom, three times last season, but I have never seen a bee on a blossom. Can you tell me why this is? Hillsdale, Ind., July 5. ED VAN SICKLE.

[I congratulate you, friend V., on having so good a thing as sweet clover all about you, and yet you did not know it. The sample you inclose is veritable sweet clover, and I am sure that your stock will eat it when they have once been taught what it is. Some time when your horse is hungry, and is grabbing for all sorts of vegetation, let him get hold of some of this sweet clover. After he has learned the trick I feel sure he will prefer it to every thing else, and so will all other kinds of stock. And another thing, just tell your farming friends that this same sweet clover is worth more than red clover or any thing else to plow under. If you want to get the very best results with alfalfa, get sweet clover in the ground first, and then plow it under and sow your alfalfa; or, if you choose, put on any other where the rank growth of sweet clover has been plowed under, and see what the results will be. If it is true that a Methodist preacher did start sweet clover in your region, he certainly did "missionary work" for the coming generation of farmers.

In regard to the bees not getting honey from your alfalfa-field, it has been said that alfalfa does not often yield nectar in the unirrigated portions of the country. Can our friends where alfalfa honey is a tolerably sure crop tell us more about this?—A. I. R.

Extracting Honey Without an Extractor.

Can you tell me how to separate the honey from the wax in brood-frames that are not of good shape without an extractor? I do not care to save the comb except for wax.

Madison, O., March 3.

J. H. WOOD.

[If the combs are full of old cocoons you should squeeze them in a press and thus separate the honey from the wax; but if they are not very old we think it would be much better if you placed all of the combs, or as many of them as possible, in a large can or pail, and then set this vessel in a larger can containing hot water. By surrounding the can

containing the comb with the hot water you can melt the wax, and the wax will then separate and rise to the top, floating on the honey underneath. When all is melted you can allow it to cool and then lift up the cake of wax off the top, when you will have your honey in good shape, with the exception that it will need to be strained to get rid of the propolis, pollen, and other refuse. Be careful not to boil the water, since there would be some danger of injuring the flavor of the honey.

The plan given above would be similar to the principle used in the capping-melter, although in the latter device the honey and wax as soon as melted run out of the bottom directly into another receptacle so that the process can be continued, and the honey is not heated longer than necessary.—ED.]

Do Center Baits Mean Drone Brood in the Sections?

Doolittle tells us to put the bait sections in the center of the super; but I should think he would have baits full of drone brood if no excluder is used. I put all baits in the corners and ends of the supers, and I get the exact results that Dr. Miller does by putting a completed super from some hive on top of the super that has the baits. The bees seem to take to running up into this fresh full super, and soon fill the space between it and the hive full of bees. I believe it to be a good plan. It has proven a success with me in hot weather, but the opposite in the fall.

Bradshaw, Neb.

C. B. PALMER.

[Following is Mr. Doolittle's reply:]

Undoubtedly you would be right about this drone-brood matter if the baits were of drone size of cells; but as nearly every bee-keeper now fills his sections full of very thin worker foundation these baits are of worker comb, so that drone brood in sections "cuts no figure" during the twentieth century.

Baits in the corners of the supers are all right with a hive full of bees; but as baits are mainly used to entice the bees into the sections early in the season, before the colonies get strong enough to contract the swarming fever, they do this enticing much the best in the center, thus starting the bees above long before they would with these not over-populous colonies if placed at the corners.

You admit the correctness of my position when you say your plan works well in hot weather with a hive full of bees, but the opposite in the fall.

Borodino, N. Y.

G. M. DOOLITTLE.

A Reply to Dr. Miller on the Question of Cells Hatching in Nuclei or in Nursery Cages in a Strong Colony.

Dr. C. C. Miller:—We find proof every day, in our queen-rearing work, that cells do not hatch as well in cages as when in direct contact with the bees. We hatch a lot of virgins in nursery cages because we have orders for virgin queens. At the close of our grafting last year we made a large graft from which we got 140 cells. This was on Aug. 28. On September 7 we found that we had only about half enough queenless nuclei for our ripe cells, so that over 60 had to be caged. These were hung in the upper section of strong two-story colonies. Four days later we found that, while nearly every cell in the nuclei had hatched, only 12 hatched in the nursery cages.

Our nuclei were somewhat depleted, as they always are near the close of the season, and the nights were cool; yet under these unfavorable conditions the odds were five to one in favor of hatching the cells in the nuclei. More than that, we have found from repeated experiments that queens hatched in the nuclei will commence laying two days sooner "on an average" than queens hatched from cells of the same date in cages and introduced to the nuclei.

Medina, O., July 9.

M. T. PRITCHARD.

[It will be remembered that Mr. Pritchard is the apiarist in charge of our north yard.—ED.]

Continuous After-swarming with Virgin Queens.

In July I had a colony swarm and return to the same hive. These bees came out (just a few at first) and circled around; then one morning I heard a roaring sound; and when I looked out the air was thick with flying bees. I watched, and noticed a few seemed to be alighting in front of the hive from which they just came out. I went to see what they

were going to do, and just then the queen alighted and ran into the hive, the bees following till they all went in.

On the third day afterward this performance was repeated, the queen going in as before. On the fifth day the bees came out again, this time clustering about 30 ft. away. The next day there was another swarm from that hive; then I examined the combs, and found a nice-looking queen, another queen just about out of the cell, another queen about half grown, and three other cells. I should be very glad to know the cause of the swarming.

Heaton, N. Dak.

MRS. D. B. SCHWAB.

[This seems to be a case of continuous after-swarming. Usually, with a first swarm, the old queen and the swarm leave just before or just about the time that the virgins from the cells begin to hatch. If there is nothing done with the parent colony these virgins will be quite apt to take out after-swarms when they take their flight. The usual rule is to cut out all the cells but one after the first swarming, and even then it may require additional treatment to prevent the bees swarming out.—ED.]

Are Foul-brood Scales and Honey Often Found in the Same Cell?

A. H. Gilstrap, p. 412, appears to have found that which I have long been looking for—namely, the decayed larvae of foul brood and honey occupying the same cell. While I have, time and again, diligently sought for this combination, I have as yet been unable to find it. Occasionally isolated cells of live brood can be found in capped honey; and so also can capped-over foul-broody cells be found under the same conditions; but to find honey stored in any cell showing any trace of foul brood I have as yet been unable to do.

I should not wish to be quoted as authority that this combination does not frequently occur, as my observations have been confined quite largely to cleaned-up combs; but I am very sure that it is a far more rare occurrence than is generally supposed. By the way, this is one of the strongest proofs supporting the clean-up theory. If the dried-down scales of American foul brood, as we are taught, can not be removed by the bees, what becomes of the evidence of them when those same cells are filled with honey?

A CORRECTION.

On page 416, July 1, I was made to say, "When I returned I expected to render those foul-broody combs of this one colony at once; but to my surprise the brood was perfectly healthy." What I really meant was that the brood was *apparently* healthy.

Prophetstown, Ill.

HENRY STEWART.

Another Way of Filling Empty Combs with Syrup for Feeding.

On page 341, June 1, Mr. Doolittle tells us how to fill empty combs for feeders. I have a trough large enough to dip a Langstroth frame down the full depth. I put the syrup in the trough and dip the cut combs down into it clear up to the top-bar. I place the combs into the syrup very slowly so that the air in the cells can have a chance to get out. As the syrup runs into the lower part of the cell, the air is forced out of the upper part. Then I take the comb out and place it in a hive-body, near by, over the uncapping-table, the drip from the combs passing directly down into the capping-can, as when I am extracting.

I fill the combs about noon, so that the drip will have disappeared by the time the evening feeding commences. By this plan of feeding one can select the combs that he wants for brood-combs, fill them, and put them in the hives right where they are the most needed. Of course, combs containing good sealed stores are all right. I agree with Doolittle on this point.

Soldiers Grove, Wis.

C. S. GALD.

Good Results when Hive is Shaded.

On page 360, June 1, reports are called for in regard to the efficiency of colonies in shaded hives. I agree with Mr. Barbisch, for I have had a hive standing between two buildings for four years. The sun shines on it for about 2½ hours toward evening in the summer time. In the winter, for about three months the sun does not reach the hive

at all. Last year was a little below the average; but I secured from this colony \$6.73 worth of extracted honey, and my next best colony, in a hive where the sun could reach it, gave me \$5.35 worth, the others that were not shaded extending all the way down to \$2.15. This colony standing between the two buildings has not swarmed for the last four years.

CHAS. W. HOPSEGET.

Clear Lake, Wash.

Willows for Bee-forage in New Zealand.

Mr. Doolittle has mentioned willows as being good bee-forage in spring. I can fully indorse what he said, as here in Kalapoi we have miles of willows along the Waimakariri River—both weeping and straight—which yield an abundance of nectar, lasting with both kinds from two to three weeks. On a bright day the trees fairly hum with the bees working so that they can be heard for some distance. When one looks into the catkins the nectar can be seen quite easily with the naked eye. The trees grow to a considerable size here, it being no uncommon sight to see willows with trunks two to three feet in diameter, and of a good height. The weeping willow is only six weeks without leaves for the whole year.

Kalapoi, N. Z., May 6.

S. RINALDI.

The Proper Plan to Get Foundation Drawn Out.

I am short of extracting-combs, and wish to have them built from foundation this season. I desire no increase, and like to leave the bees in the fall on new combs. The reasons are to have fewer drone combs; second, to have a stronger comb to extract from. The question is now, which is the better: when bees need room to put the second story with foundation on top, giving the queen both stories, and then when filled with honey and brood reverse them, putting the upper story on the bottom and then keep the queen below with an excluder, or to put a hive with foundation on the bottom-board instead of reversing later, and then when filled with honey and brood to keep the queen below with an excluder?

Falmouth, Michigan.

ALBERT TIEN.

[We would recommend the first plan, of putting foundation in the upper story, rather than in the second.—ED.]

Bees that Lived all Winter and then Stored.

Concerning the life of a bee, page 280, May 1, I will say that I introduced an Italian queen to a colony of Banats the latter part of last August. She did not lay at all last fall, but is doing finely this spring, and her bees were very evenly marked. Now, the entrance of this hive faces east, and all of my others south or north, and at least 12 ft. away. What I want to say is that there are quite a few Banats left in that hive now, and they have been working quite steadily since March 20. I killed the old Banat queen because her bees were so cross.

Oneco, Ct., May 12.

T. B. MOWRY.

Swarms from Swarms.

I had a good deal of trouble with my first natural swarms. Just about the beginning of the buckwheat flow, which is always a large crop here, these first swarms will start to swarming again. This makes it bad, as it is very important that the bees all be at work. I had plenty of supers on, and the bees were not crowded for room. I had eight or nine that bothered me more or less in this way.

Cranesville, N. Y., Jan. 11.

F. W. RANKIE.

An Apiary Lost on Account of a Flood.

On July 30, last year, I met with a severe loss on account of high water. About 70 hives washed away, about 45 of which contained bees and honey. I thought they were above the high-water mark. On Feb. 4 back water caused me to move some of the hives and place them on trestles. This time the water came from the creek. I had kept bees on this ground for 25 years, and had no thought of danger from the water.

A lot of the hives were caught by my neighbors, and in all I have recovered about 40 empty hives and one which still had the bees in it after floating down the river for six miles. I estimate my loss at about \$500.

Cornishville, Ky.

GEO. W. MORRIS.

Full-sized Frames Preferred for Queen-rearing Nuclei.

On p. 389, June 15, is an article from Mr. Pritchard headed "Twin Nuclei v. Single Nuclei." Now, I am not going to dispute a word of his, for I have found that he is correct on all points; but I wish to say that, after trying both twin and single nuclei, I have about discarded both, and have for several years used the large triplet, which is made by using two tight division-boards in the eight and ten frame hives. The entrances are in each end and one side, and each nucleus in the eight-frame size has two Langstroth frames, while the center nucleus in the ten-frame size has five frames, and is used to draw brood from to restock weak nuclei or start more. These large nuclei are self-supporting, and here in the South they winter as well as the full colonies. I have been surprised to see what good swarms will sometimes issue from them. They are just the thing to build up an apiary, as these swarms will soon make fine colonies. Then when the rush of the queen season is over I can put on an excluder and use a super on top of the triplets and secure some honey, and have all three queens doing duty below. As each queen uses all the combs she can for brood, most of the honey will go into the supers, the bees from all three nuclei mixing in the supers. When the flow is over the supers must come off.

That one nucleus has a queen, and the others now have nothing to do with the bees provided there is no crack or hole in the division-boards through which they might crawl.

In introducing virgins I find many of them missing, some with frazzled wings, some minus a leg, and useless. Those hatched in the nuclei are all right unless naturally deformed, which is seldom the case. Cells, however, should be handled as little as possible, and not taken out of the hive until nearly ready to hatch, which time can be determined by holding the cells up toward the sun.

Sabinal, Texas, July 1.

GRANT ANDERSON.

Storing Honey in Galvanized Pails.

Will extracted honey keep if put in galvanized pails?

Holt, Minn., June 25.

CHAS. DOHRMAN.

[For a reasonable length of time we do not think that it would injure the honey in the least to be stored in galvanized-iron pails; but for keeping it indefinitely we do not believe you had better use the galvanized metal, as there is likely to be some little action on the metal, due to the slight trace of acid in the honey. Occasionally if a small amount of honey is left in a galvanized-iron can it will be tainted a little, and this shows that there might be some action on the metal if a larger quantity of the honey were left on the metal a very long time in a galvanized receptacle.—Ed.]

Why was the Queen in the Grass?

For a period of eight or nine years I have clipped all of my queens. On one occasion when I was busy in my yard I was called in for dinner; and while walking up the apary I noticed the bees of one hive flying out as though they were swarming, but the colony was in no condition to swarm. I saw the queen in the grass, with a bunch of bees around her, and on opening the hive I found the combs in fair condition. The brood was capped, and there were lots of eggs in the cells. There was no sign of a queen-cell, and, in fact, this colony was not more than a good strong nucleus. I put the queen back in the hive, and did not investigate for several days on account of bad weather. When I looked again I found the clipped queen on the combs all right, and she is there yet, and no swarm has issued so far this season.

I have been wondering whether this queen could have been trying to leave for a second mating-trip. I believe the swarming theory is out of the question.

Hyndsville, N. Y.

J. G. WEIDMAN.

[We can not escape the conclusion that, for some reason, the nucleus had attempted to swarm out, and the queen tried to follow; but because she was clipped she could go no more than a foot or two from the entrance. When you arrived, of course you would find a lot of bees around her. Had you

not put her in the hive she would probably have gone back of her own accord.]

The fact that the time referred to was not the swarming season does not prove that this could not have been a swarm or an attempt at swarming. If the colony was short of stores, or if some condition was not satisfactory, it might swarm out, swarming season or not. Snakes, mice, ants, and other disturbing conditions will sometimes force a swarm out, even when all the conditions for natural swarming are entirely absent.

It is hardly probable that the queen could have been trying to leave for a second mating-trip. No substantial proof has ever yet been furnished to the effect that, after a queen has once been successfully fertilized, or rather, perhaps we should say, after she once begins to lay, she will ever leave again on a mating-trip. Virgins sometimes make two or three flights—several of them—coming in with evidences of fertilization before they actually begin to lay. Any amount of proof has been furnished on this point. But these second or third mating-trips must not be confused with the supposed mating of a queen after she once begins to lay. If any of our correspondents, old or new, can refer to a single authentic case of second mating, after laying has begun, we should be glad to have them furnish the proof.—Ed.]

Why were the Drones Killed?

What is the reason that bees carry out so many drones at this time of the year—May 25? They first brought out the mature drones and now they are bringing out the white larvæ.

THE SOLAR HONEY-LIQUEFIER.

J. E. Crane wants to know more about that fireless honey-heater described on p. 771, Dec. 1. I put some honey through it, and it has not granulated yet. I put it in as soon as it was extracted. If possible it should be left in a full day, and it shouldn't be allowed to reach a temperature of over 160°. I regard this as a very good way for heating up honey in glass packages, for neither the color nor the flavor is injured, provided the temperature does not get higher than it should.

Wildwood, Mich.

C. W. REBER.

[Your drones were being killed off simply because the honey-flow had stopped. While drones are not usually destroyed during the fore part of the season, yet if you had been having a flow of honey from fruit-bloom prior to May 25, and that flow was suddenly stopped, you would probably find your drones being killed off as you describe. We usually figure that when drones are being killed off, the drone larvæ destroyed, that the honey-flow is either tapering off or has stopped entirely. In fact, this is one of the very best evidences that nectar secretion has stopped.—Ed.]

Two Swarms that Hived Themselves.

This morning two swarms of my bees came out at 8 o'clock. There were two hives in which colonies froze last winter, and one of these new swarms went into each of the old hives. I had left the old combs in the hives, thinking I would clean them out some time, but neglected to do so. This is the first time that I ever had this happen, and I have had bees all my life.

Massillon, O., June 23.

G. N. BEITER.

[The circumstances that you relate are not uncommon. In fact, we may say it is the most natural thing in the world for the scouts of a prospective swarm to find empty hives containing combs; and, when the swarm does actually come out, it goes into the hive the scouts have located. Quite recently, in making some tours among bee-keepers we looked over some old hives containing combs on which the bees had died the previous winter. On asking the owner if he had any bees he replied, saying that he had a lot of old hives with combs in them, but the bees had died the winter before. There were many other bees in the neighborhood. There had been considerable swarming among the bees of his neighbors, and we were not surprised when we found one or more of these supposedly empty hives containing bees. The scouts from the swarms had located them, and the swarms, of course, went into them.—Ed.]

Our Homes

By A. I. Root

God hath chosen the foolish things of the world to confound the wise; and God hath chosen the weak things of the world to confound the things which are mighty.—1. Cor. 1:27.

I have several times alluded to a period in my life when I thought it a fine thing to point out the faults in professing Christians, and even to ridicule the precepts of the good old Bible. I think I had been keeping rather bad company at that time of my life. I was also very busy in accumulating what I could of the things of this world. Somehow I had forgotten, or, rather, set aside my good old mother's teachings, or at least I had lost sight of them, apparently, for the time being; for God knows I never strayed very far away from that good and sainted mother. At the time I mention, I was not attending church nor Sunday-school. I do not know but there were several years of my life, when I was between 20 and 25, when I rarely attended religious services of any kind. When I look back now and think of it I am led to exclaim in wonder, "Was that really A. I. Root?" The ministers of the different churches of Medina called on me, it is true; and I think I sometimes gave a little contribution for keeping up the church and Sunday-school; but whenever I talked with those good pastors I generally persuaded them, or at least tried to persuade them, that I was a "pretty good sort of man," after all. I "paid my debts," "did not get drunk," etc. One day while I sat working at the bench (for I was a watchmaker and jeweler) I said to the young man who was my assistant and clerk, "Who is that red-haired young man whom I have seen on the streets several times lately?"

"Why, Mr. Root, that is a young theolog from Oberlin. If I am correct, he is to be pastor of the Congregational Church. Your people attend that church, do they not?"

I assented; but I felt ashamed to own up that, although Mrs. Root attended regularly, and two of our children who were old enough, were always on hand for Sunday-school, I had not been often enough to know who the minister was nor any thing about it. In reply to what the clerk had said I added, "Why, do you mean that that fellow is a preacher?"

"That is what he is unless I am greatly mistaken."

"Why, I do not believe that that boy can preach a sermon. If he does, I believe I would like to go and hear him, just for the fun of it."

I thought then that it would be a fine thing to listen to his boyish attempt to preach a sermon. And another thing, it would give me an opportunity to criticise, with my very superior knowledge (?) and attainments.

I suppose some of my good friends will

scold because I have given place to the above; but as nearly as I can recollect it gives pretty correctly the true dimensions of your old friend A. I. Root when he was the father of a family of only two children old enough to go to Sunday-school. After that I forgot all about the young minister; and perhaps I would not have gone to hear him preach after all had not something occurred to call the boy preacher to mind again. Mrs. Root, although then not a member of any church, has been, every moment of her life, a firm believer in the Bible and Christianity. When I declined to go to church, shortly after our marriage, she always went whether I did or not; and as soon as our children were old enough to go to Sunday-school they were always on hand.

You may have gathered from these Home talks that Mrs. Root is a very neat and tidy housekeeper. Not only that, she has a wonderful faculty for keeping the children neat and tidy. I never came home from my work without finding the boy and the little girl, at the period of which I am speaking, looking neat and sweet, and ready to be kissed; and Sunday mornings especially they were fixed up just as neat and trim as it was possible to fix them with our humble means at that time, for it is true, dear friends, that Mrs. Root and I commenced housekeeping with almost no capital; and for many years after, we saved the pennies and cut down expenses in every way; and may the Lord be praised that we *did* have to make our own way in the world.

Well, I was always "tired" on Sunday—at least I said I was. I had been confined in the shop and behind the counter a dozen hours or more every day, and Sunday I wanted a *rest* day. I did not exactly rest all day Sunday, either, although I often talked about it. Well, one Sunday morning Mrs. Root proceeded as usual to fix up the children for Sunday-school. She got the boy ready first; and while she was shining up the shoes for the little girl and putting on the finishing touches in other ways, this boy came into the front room where I was sitting in the middle of the room in a rocking-chair, perhaps reading the *Scientific American*. I looked up and admired him. He certainly was a bright handsome boy, and he and I were the greatest friends in the world. He asked questions, and I answered them to the best of my ability; and we were both greatly interested in all that was going on in the beautiful world that God has given us; yes, I felt it even then, but I did not state it then in exactly that way. While I was reading something that greatly interested me, Ernest (for he was the chap) commenced walking around my chair. When he was in a brown study about any thing, or when something was on his mind, he had a habit of walking around in that way. I soon recognized that something was troubling him; so I laid aside my paper and said, "Well, Ernest, what is it?"

Without replying at once he looked up to me in a wishful sort of way and hesitated.

When I encouraged him, however, by saying, "Come, my boy, can't you tell papa what troubles you?" he looked me in the face and gave me a little sermon. It was a boyish sermon, but it was a sermon after all, and one of the most effective sermons I had ever heard before or have since. I had been laughing at the idea of the *boy* preacher whom I saw out on the walk; but here right before me was a boy preacher sent from God, perhaps in answer to the prayers of the old mother. The sermon that took such a mighty hold on me at that time was something like this:

"Why, pa, don't you think it would be better if you would dress up Sunday mornings and go with ma and Maud and me to Sunday-school instead of going off to the woods Sundays as you often do?"

I think that was about all of the sermon. It was short, but it was to the point. If anybody else had presumed to dictate to me how I should pass my time on Sunday I might have resented it. I had already discovered my ability in certain directions, and I was a little touchy about having anybody tell me what I ought or ought not to do; but I did not dare to speak crossly nor unkindly to that bright, clean, blue-eyed boy. I do not know what answer I gave him. I fear I did not thank him for the effort he had made, for it was something of an effort to rebuke the father whom he loved and patterned after; but after he had said what was on his mind he was evidently relieved and happy over it; for pretty soon afterward I heard him singing and shouting in his childish way, apparently forgetting or not recognizing the weight of the message God had sent and he had delivered.

I can not now recall whether I went to Sunday-school that morning or not. The question the boy asked kept ringing in my ears—"Would it not be better? would it not be better?" and I finally surprised Mrs. Root by making myself presentable, and going along by the side of the children; and I did also go to hear the boy preacher. One incident I shall always remember that he brought out in that first sermon I ever heard him preach. It was something like this: He was trying to tell his hearers the difference between true Christianity and an utter disregard of the gospel claims. Just about that time a steamboat took fire on the Ohio River. There were not enough life-boats and rafts to get the passengers ashore, and each little craft was loaded down with just as many as it could carry safely. Some women were put on a raft. A big burly man climbed on with them. The raft began to sink, and it was evident that it could not hold them all. This big man, in order to save his life, with his superior brute strength struck the poor weak helpless women, knocking one or more of them off into the water to drown in order that his great bulky worthless carcass might reach the shore. A cry of consternation and horror came up from the spectators on both sides of the river, who had gathered to help

save the lives of the passengers. But this fellow got off on the West Virginia side, and escaped off among the hills before the outraged inhabitants could get hold of him.

The boy minister gave this as an illustration of a man utterly destitute of the grace of God or the claims of religion. I soon became more interested in the boy preacher than any minister I had ever known, and finally had a talk with him; but I did not succeed at all in persuading him that I was a "good man," even if I did not belong to any church; and when he afterward used as an illustration a part of his talk with me in one of his sermons, I was very much offended, although, of course, he mentioned no names. I met him on the street afterward, and we had some pretty plain talk. I told Mrs. Root afterward that I would never go again to hear him preach; but when meeting time came the next Sunday I felt very uneasy, and finally decided to go and hear him once more after all, even if it was so late that he had probably commenced his sermon; and on reaching the church door I found he had actually commenced; but I decided to go in as quietly as I could and get a seat notwithstanding. To tell the truth, I had attended church so little at that time of my life that I either did not know (or, perhaps, care) it was bad taste to enter after the minister had commenced. Either he had come to a pause in his sermon or else he decided to wait until I was seated before he went ahead, and that vexed me. While his sermons caught hold of me they did not contribute very much to my peace of mind. Some time after, we met and had quite a talk, and finally we seemed to be getting into an unprofitable disagreement. He, evidently recognizing this, said something as follows:

"Mr. Root, it evidently is not best for either of us to prolong this discussion."

He stood a moment without saying anything more. As I learned afterward, he was, even at that early period of his ministry, much given to silent prayer for guidance, so I can readily believe he was praying for the Holy Spirit to lead him. He finally said something like this:

"Mr. Root, you have a boy, I believe, and you love that boy."

"Yes, God knows I do love him," I replied.

"Well, now, Mr. Root, do not answer me, I beg of you, but answer the God who made you. Do you want that boy to grow up exactly such a man as you are?"

As I made a motion to reply he raised his hand and said:

"Please do not answer me. Answer your Maker. It is between you and God."

Then he left me. Had he permitted me to reply to him I would have said promptly, that, if the boy grew up to be as good a man as I was, he would do pretty well; but I was considerably stirred up by the question; and I want to digress a little right here to consider this matter. Some very good people and some very truthful people when excited

or vexed will say things and stick to them that they would not say when unruffled or unprovoked. We can not call such things falsehoods, for the one who utters them is at the time honest about it. Oh how many times I have made statements or assertions in the heat of the moment that I wanted to take back after I had cooled off, as it were, and could take a reasonable view of all the circumstances! The good book has well said, "He that ruleth his own spirit is mightier than he that taketh a city."

Dear friends, I have just been telling you something of my acquaintance with the late Rev. A. T. Reed, whose name has been mentioned more or less in these Home papers ever since they were started. The above incident was called to mind by his recent death. God has called him to the joys of his eternal home where he surely has laid up many treasures where moth and rust do not corrupt, and where thieves do not break through nor steal. After the boy preacher left me his parting words rang in my ears. He said I should answer God, the great Father of all. Then I began to debate on the question. Can a man talk with God? Was it possible for me, even if I wished so to do, to tell my heavenly Father the exact truth as to whether I wanted that merry blue-eyed boy, as he grew up, to stand exactly in my foot-tracks? If it *were* possible for me to answer God, what *would* that answer be? I debated on the matter until it was time to put up the blinds and close up my store. Somehow I wanted to be alone; and when the blinds were up and the lights were out I somehow unconsciously knelt down in that silent room, and there I answered the question the boy preacher had propounded. In that moment I scanned my past life for the preceding 25 years. I remembered my happy childhood while I knelt at my mother's knee; and then I faced the question, "Shall that boy, with his childish faith, follow my footsteps?"

In agony of spirit I said, "No; God helping me, *no*." And then I breathed a prayer something as follows, so far as I can recollect: "O God, if there is really a God who hears and answers prayer, help me so to live from this day on that I shall not be afraid to have my boy follow exactly in my foot-steps. Give me back, I pray thee, my mother's faith and the innocent happiness of childhood such as I had when I knelt at her knee in years past."

Dear friends, there was that night a sudden break and abrupt turning-point in my life. A. I. Root before that period had been somebody else; and A. I. Root since that time has really been somebody else than the man he was before that time. Although the boy minister did not stay very long in Medina, he and I had been in close touch more or less from that time until his recent death.

Since the incident mentioned above occurred, something like forty years have passed. The curly-headed boy who delivered the boyish sermon has not only grown up

to manhood, but a curly-headed boy like himself came into his home; and this boy has grown to manhood. In fact, he is so tall that he almost looks down on myself when he calls me "grandpa." This boy and I have just returned from a trip up in Northern Michigan, to the old original "cabin in the woods." By the way, dear friends, one might naturally suppose that a man who is seventy years old, and has retired from the arduous duties of a busy life, would have little temptation to *do* wrong or even to *think* wrong. But do not be misled. Satan will keep on testing and trying you, probably, to the end of your days. While off on that pleasant trip a temptation presented itself; and, as usual, Satan suggested that there was nothing particularly wrong about it. I remember that he added that "a good many Christian people do not seem to think it is any thing out of the way." While I was hesitating, something called up to memory the incident of years ago; and then the good spirit (could it be a voice from the past, suggested by the memory of my dear departed friend Rev. A. T. Reed?) said, "Would you like to see that child of yours or that grandson of yours hesitating about this very thing you are considering just now?" Swift as the wind came my decision. If this young boy, not yet out of his teens, considers his grandpa just about right, and is ready to copy him, may God help the *grandpa* (and all other grandpas, for that matter), to keep very closely in the straight and narrow path that leads from earth to heaven. If I remember correctly, Satan did venture to suggest, as he backed off out of sight, that the grandson "need never know any thing about it *at all*." And then he added that many things are quite right and proper for men of seventy that would, *of course*, be entirely out of place for a boy in his teens.

In a future Home paper I propose to discuss the two concluding suggestions that Satan offered and *continues to offer*.

Notes of Travel

By A. I. Root

The kingdom of heaven is like unto leaven which a woman took and hid in three measures of meal until the whole was leavened.—MATT. 13:33.

On the first day of July my oldest grandson and I made a short trip to the Grand Traverse region of Northern Michigan. On the morning of the second day we stepped off the cars at Traverse City. It was hot and sultry and dusty, for there had been no rain in that region for almost a month. This condition of affairs prepared us to take in the beauty of a pretty fountain of water, clear as crystal, close to the Grand Rapids & Indiana station, and a part of the depot grounds. This stream of water, although it comes from an artesian well, is beautifully cool and pure as it pours into the stone

basin in such volume that nobody need fear "wasting the water." In fact, a clean wash-bowl stands on a bench right beside the reservoir, and anybody who chooses can take a bowlful of the water out on the green grassy lawn, and wash off the coal cinders and dust to his heart's content. If more railway companies would add such a lavatory, or a similar one, what a boon it would be to a tired and dusty public! There is one trouble, however—not every locality can well furnish such beautiful clear water as we find *everywhere* in Northern Michigan. The streams that come down from the springs up among the hills are all pure clean water. When they run over the pebbles they do not leave that disagreeable muddy incrustation so common here in Ohio. I suppose it is owing largely to the sandy soil and the sandy hills.

Leland and I took a trip on the train of about ten miles, which landed us within half a mile of our cabin in the woods. Although our suit-cases were rather heavy, together with a basket of provision to last over Sunday and during the 4th of July, we took a short cut through the woods to see the spring that supplies the water for our ranch. There it was, sure enough. A $\frac{3}{4}$ -inch iron pipe was pouring a stream the full size of the pipe into a barrel set in the ground right in the midst of the cool dense woods. This water is soft enough to wash with soap; and the severe drouth seemed to make no difference with the volume of it. That old home in the woods had been neglected for two full years. I did not get around to see it last summer at all. Two years ago I told you about the beautiful mulberries on two trees near the door. They were just the same on this visit. One of the trees bore black mulberries, while the other one bore pink or white ones; and it seemed to me as though I never saw fruit of any kind packed so closely together on every limb and twig as I saw on that whole tree. Here in Ohio the birds get about all of our early mulberries and cherries, almost before they are ripe; but up in that great fruit region of Northern Michigan there do not seem to be enough birds to go around. The berries were so ripe that they are dropping on the ground; and by spreading out a newspaper and shaking a limb it is an easy matter to fill a berry-basket in a twinkling. I do not know the name of this pink mulberry. The fruit is small—nothing like the mulberries in Florida *in point of size*; but they have a rich and delicious taste, reminding me every time I taste them of some beautiful custard. Besides the mulberries there was a great plenty of currants from the eight varieties I planted there years ago. There were also a few ripe cherries. It is interesting to note what varieties of fruit and shrubbery would make their way without any care in pruning or cultivation in two years or more. The mulberries grew all right. The apple-trees, or most of them, were making a satisfactory growth and contained some fruit, but they were hardly old

enough, however, to bear very much. The cherry-trees, or most of them, have suffered either from lack of cultivation or a suitable mulch. The peach-trees were getting along very well, but were damaged by many dead limbs from a lack of judicious pruning. My asparagus plantation did finely; but most of the other stuff put out years ago had gone down in the battle, or what Darwin called "the survival of the fittest."

Sunday morning we were up bright and early and over in the Bingham Sunday-school. As the teacher was absent I had my old class of thirty or forty bright boys and girls. Before closing the school the good woman who had been for so many years superintendent asked me to give the school a little talk. Our lesson for that Sunday was the one about the mustard seed and the leaven put in the meal. I told the friends assembled there that I had, during my busy life, dabbled in many enterprises. I had tried chickens, strawberries, potatoes, honey-bees, and some other things. Some of my ventures, in time and money, have given good dividends, and some have not. Then I closed by saying something like this:

"Dear friends, I am getting almost too old for many more kinds of business. I may be very soon called by the good Father to leave this earthly home; but when I feel my time has come I shall look back over my life, and I am sure I shall feel that the time and money I have invested here in this Bingham church and Sunday-school is one of the *most satisfactory* investments I have ever made. I shall think of it as 'treasures laid up in heaven, where moth and rust do not corrupt, and where thieves do not break through nor steal.' When I first came into your midst, something like ten years ago, when they told me there was no Sunday-school here at all I started out one Sunday morning, and, with the help of some who, I think, are here to-day, we had a bright well-attended Sunday-school before half-past ten o'clock, the time for the meeting. If I am correct there has been a Sunday-school here winter and summer ever since. But some of you told me it could not well be kept up during the winter because the snow drifted so deep down around this little church between the hills. I asked some of the boys the question whether the snow ever got too deep to make a path to the saloon near by. Well, may the Lord be praised for the fact that now there is a good path to the church every winter. But there is no path to the saloon at all, because for several years there has been no saloon at all. The influence of this Sunday-school, that I am proud to say I helped to start on that spring morning, has been like the leaven that the good woman hid in three measures of meal in the lesson we have been studying this morning. I have been told by people who live in the neighborhood that the Sunday-school and the church have leavened the whole community round about here. When dear

Bro. Reed spent a couple of weeks here by my invitation, in his effort to build up the church, some of the folks laughed at us because our church-members were 'just a lot of children.' But when this lot of children stood up in this little church for the Lord Jesus Christ they signed the pledge for life, and they are here yet. Some of them have grown so much since I last saw you that I did not know them. You little know, dear friends, young and old, what the outcome may be away along in the great unknown future, of the work that has been done here by your superintendent and others."

Four or five years ago I made a flower-bed across the front end of the church, and filled it with plants from the greenhouse in Traverse City. I was happily surprised to find this still kept in beautiful trim, even though it entailed bringing quite a little water during the present drouth. When I inquired who cared for the bed and the plants so nicely, the answer was, "The women folks of the church."

After the school was closed I was told that a Y. M. C. A. had been organized, and that they met just before the sermon in the evening. I was requested to talk to the Y. M. C. A. members, and tell them what I could about that association and what it is doing in the great outside world. Of course, I did this gladly, and I also gave a brief account of what the Y. M. C. A. has done to open up China to the gospel of Christ Jesus, when the missionaries of the different churches have failed after years of earnest effort.

As it was time for the evening service I prepared to close and sit down; but somebody suggested I keep on talking until the minister should arrive. As he has now a circuit of four different churches he is sometimes a little late in getting around. I was told I would know him when he came in the door, for he is a one-armed man. As he had recently come to Bingham church I thought he might be a little surprised to see a stranger talking to his flock; and therefore when I saw him come in the door I stopped my story and introduced myself. But he took a seat near me and bade me go on and finish my talk. I should like to tell you something about that sermon if space permitted; but I can say this: Even if he *did* lack an arm, there was certainly no "lack" in spirituality and ability to proclaim God's message.

I had proposed to spend my 4th of July in packing up our tools and implements, that were no longer needed at the "cabin in the woods;" but I told Leland to go to Traverse City and celebrate if he felt so inclined. But he declared he would rather spend the day with me in the woods than to be with a crowd in the city. He said he used to enjoy such things when a boy (?), but he did not care for them of late. Pretty good for a boy of nineteen—don't you think so? I wonder if even the boys are not beginning to realize that a "safe and sane" 4th of July is more

fitting for the present age and progress of a Christian people. Is it not really true, dear friends, that even in celebrating the 4th of July we are getting on higher ground? I forgot to tell you that at the *conclusion* of that Sunday-school they sang "Mr. Root's favorite hymn" ("Higher Ground"). See page 469, July 15.

After we had got our stuff all securely boxed and crated I took a trip over the hills to engage a neighbor to haul it up to the station at Traverse City next morning. This neighbor, like most of the people in that region, was engaged in growing strawberries largely for the Chicago market. This year, just as the first strawberries began to ripen, and were ready to ship, a severe drouth sat down upon them, and thousands of dollars had been lost in consequence. I was interested in knowing what could be done to avert the disastrous results of such a drouth. Of course, clean cultivation and stirring the soil constitutes one of the best remedies for drouth; but when the berries are just ripening this is hardly adequate. Mr. Hilbert thought the best remedy, added to the above, is heavy mulching, and have the mulching put on so as to get thoroughly soaked before the drouth comes on. Mr. Palmer, close by, has a "water-wagon" that he backs down into Grand Traverse Bay under water. It fills itself, and then he draws the load up into his garden. In this way he had saved a part of his berries; but it takes a deal of water and much hard work, even with such a rig. Red raspberries were also a great industry in that region, and Mr. Palmer had about the nicest-looking patch, in spite of the drouth, that I think I have ever seen.

As I have mentioned before, one of the great industries of that region is the beautiful cherries that they ship to Chicago. While I was there my neighbor Hilbert took me through his seven-acre cherry-orchard; and in spite of what I have said about the other fruits in Florida and elsewhere, it seems to me now that I would like to place his beautiful great luscious black Tartarian cherries at the very top of the list of beautiful-looking and delicious-tasting fruit that our heavenly Father has ever given his children. Just think of it! seven acres of beautiful cherries without spot or blemish, some of them rivaling the colors of the rainbow; but the glittering, bright, shiny black Tartarian, I believe, caps them all. How can anybody on the face of the earth talk about their high-priced wines (not to mention brandy), when they can get such delicious nectar right direct from the hand of the beneficent Creator?

I told you some time ago that Mr. Hilbert, besides his cherry-orchard, had forty acres of peach-trees. His good wife and I tried to dissuade him years ago from going into the peach business so heavily; but he has kept his 4000 trees going for seven or eight years, and this year he is going to have a pretty fair crop. He said he had spent at least 100 days personally in pruning his 4000 trees

according to his own notion. Judicious pruning prevents dead limbs, breaking down, overbearing, and a host of other evils.

After leaving Traverse City we went to Frankfort. This is where is located the Chautauqua grounds of the Northern Michigan Congregational Assembly. The assembly grounds are about two miles from the station, surrounding a beautiful little lake, or, rather, it is between Crystal Lake and Lake Michigan, where there are cottages, something like a hundred in number, and where the Congregational people from all over the United States meet each year during the month of August. Well, as my brother-in-law, J. G. Gray, was superintending the building of a cottage there for our pastor here in Medina, Leland and I took a trip over to the grounds. I have told you a good deal about the beauty of the Michigan woods; but this spot on the shores of Lake Michigan, where these cottages are located, contains more attractive wild vegetation than any other spot I have ever touched. Not even the tangled tropical vegetation of Florida can equal it. There are pine-trees in those Frankfort woods that looked to me exactly like the celebrated pines of the Black Hills of South Dakota. There are more beautiful evergreens growing out there in the wilderness than any you can find in our city parks, and they were trained and fostered by the hand of the Almighty and nothing else. There are berries I never heard of before, and very good and wholesome, as we proved.

Many of these cottages are located on a bluff that drops abruptly down to the waters of Lake Michigan. Well, along this beautiful white clean sand, especially where the waters keep it wet, there is a nice clean pathway for miles where you can run a bicycle and automobile, or any thing else to perfection. In climbing down the bank, right in the pure white sand I saw a species of vetch with blossoms that rivaled any of the sweet peas of cultivation. Now, this plant, besides its beauty, must be a valuable legume. I did not think to offer it to the horse we got at the livery stable; but I am sure he would eat it. Now, would this plant whatever it is, grow under cultivation with as rank luxuriance as it does here in clean sand, almost white?

When we got back to Frankfort my brother-in-law said I must not go away before I had seen a certain beautiful fruit-orchard. As it was only over a little over a mile away from the hotel, I walked out. There I saw the beautiful black Tartarian cherries I have described before, besides the greatest variety of fruit you can imagine, all under the highest state of cultivation. Heretofore when I talked with the farmers of Northern Michigan about chemical fertilizers I could not learn that they had ever been tried; but Mr. C. H. Chapman has been making a success by the use of what he calls Buffalo fertilizer. Notwithstanding the excessive drouth, he had acres of rasp-

berries, blackberries, and almost every other fruit showing wonderful luxuriance and evidence of great crops. While thinning his peaches he had little girls employed only ten or twelve years old. Of course they had a foreman to watch and instruct them. But these girls would climb all over the trees without bruising or injuring the limbs, perhaps better than anybody else in the world.

When I saw more peaches on the ground than were left on the trees, it seemed as if it could hardly be the thing to do; but Mr. Chapman has had such wonderful success that I presume he knows what he is about. There was a report that he had been offered \$30,000 for his forty-acre tract. Thirty acres of the forty contained fruit of different kinds, now in full bearing. By standing on his porch he can not only see every train that comes into the depot, but he can see every steamer out on Lake Michigan; and it is so desirable to get the fruit quickly from the trees to the railroad station that he makes a practice of keeping a lookout on his porch, and starting his wagon so as to have them reach the train or steamer that is already in sight. I do not know but this almost beats wireless telegraphy.

Now, here is another example of what an intelligent man can do with land that some people might say is not worth taking as a gift; and he gets his crops of fruit, too, when things with ordinary management are dried up and ruined by drouth. Of course, Mr. Chapman will lose a part of his crop of strawberries; but the raspberries and blackberries, plums, and peaches seem to be but little affected as yet.

Before closing I wish to add that C. D. Sheldon, author of "In His Steps," besides a host of other great speakers, is to be present at that Frankfort assembly during August.

Just as I finished dictating the above I was informed by the Pere Marquette Railway Co. that on Tuesday, Aug. 16, they will have an excursion from Toledo to all Northern Michigan points for the small sum of \$5.00 for the 15-day round trip. I presume likely that on that date your station agent will make you a like low rate from your own station to points in Northern Michigan.

Poultry Department

By A. I. Root

A HEN THAT LAYS 200 EGGS OR MORE IN A YEAR; HOW AND WHERE SHALL WE GET HER?

I suppose it is generally recognized that the South Australian tests for egg-laying are not only at the head of the world, but as the tests were managed by disinterested committees they are probably authentic. From an article by D. F. Laurie, of Adelaide, South Australia, published in the

American Breeders' Magazine, we are told that poultry-breeding in South Australia dates back 60 or 70 years. About 25 years ago several importations were made. These birds hailed from America. I presume our readers are more or less familiar with the manner in which the tests were made. Six hens were confined in a pen; and, as I understand it, about 25 pens of 6 pullets each headed the contest. The highest score that has ever been made, if I am correct, was 1447 eggs from one pen of 6 hens in one year. This would give a little over 241 eggs for each hen. Of course, some one or more must have laid more than 241 eggs, and some less. It would have been interesting to take these six pullets and afterward test them singly. Now, then, how did they manage over in Australia during the past 25 years to produce pullets with such a score? The following clipping tells us something about it:

Testing.—While a few still adhere to the old method of trap-nesting, the advanced breeders pen the pullets singly in small but convenient pens. Here they undergo the ordeal, the result of which decides whether or not they are to be retained as breeders. As a rule these pullets are not unduly forced; they are supplied with suitable foods in variety, but are not pampered. Few breeders would attach much value to a pullet with a 200-egg score for the year; she must lay 220 to 240 to cause any enthusiasm, and above that yield she becomes precious. Those whose test is satisfactory are specially distinguished by leg-bands and numbers, and particulars are carefully recorded.

The Male Bird.—Our breeders attach as much importance to the ancestry of the cockerel as to that of the pullet. The selected stud bird has been, up to the present time, exemplifying the doctrine of the survival of the fittest. He has, with his mates, first of all to pass muster as to type, carriage, general style, and vigor. After that he holds his own in the daily battles; who crows loudest and most frequently, and shows his strength and vigor in every detail, becomes the apple of the breeder's eye. His pedigree is accurately known, and much thought is given to the selection of his mates from among the best second-season tested females.

I prefer single testing to the use of trap nesting; i. e., each pullet or hen in a separate compartment for the whole term of testing, with no possibility of errors or mistakes. I am absolutely certain that the only way to get a flock with a high average egg production is by testing all pullets during the first year before they are bred from.

To me the most interesting part of the above is the last paragraph. The reason I say this is because I have been deciding for some time that the only way to test our flock is to have a series of pens, one or more, according to the size of your flock, where you can put one hen at a time; and when I get down to Florida again I am planning to have a dozen or more such pens. It is some work, and it will cost something—that is, if each pen has facilities for giving a confined pullet every thing she needs. I have alluded to one of the poultry secrets along this line—see page 385, June 15, 1909. Briefly, I would have these pens side by side, each about 3×6 feet, and 2 feet high. The top should be a movable lid or door that can be raised up so you can reach inside, or, if necessary, step inside. In hot weather there should be shade as well as water, and feed and a convenient nest-box. You can have two hens in one compartment, or possibly three, if they lay eggs so

different you can distinguish them by sight. Then you would have to have some sort of leg-band or mark on the hens. Of course, you would not need to keep the pullet in these single pens a whole year unless you choose. In ten days, or say a month, you can determine pretty well if a pullet is worth keeping. If your whole flock was given a test of, say, ten days or two weeks, I think it would pay all cost. For instance, I always find more or less hens that lay eggs with thin shells or no shells at all, and it is always the same hen that does it. Some of the other hens lay crooked eggs. These had better be gotten rid of. Others lay double-yolk eggs and keep doing it. There are still others that lay under-sized eggs; and we have been told, most important of all, that there are more or less hens in every flock that *never* lay an egg of *any* kind. I do not know how true this is. I have visited a number of poultry establishments where they had from three to six hens in a small pen. If you get three eggs every day from a pen of three hens, you will know the whole three are good layers; but I am inclined to think the safest and surest way is the one our Australian friends declare for—each pullet to have a separate compartment until she has been tested at least once.

Temperance

While at Frankfort, Mich., I picked up a paper on the reading-table at the hotel, called the *Michigan Christian Advocate*. From this paper I make the following clipping:

In delivering his address at unvelling of the memorial tablet at Jackson, two weeks ago, President Taft indicated his belief that the next great party issue is to be socialism, thus ignoring the prominence of the prohibition question and the vital issue whether this country is to remain half sober and half drunken as it writhes in the grip of the saloon.

The truth is, no American president has ever yet officially taken up the saloon question, calling upon the sober elements of the nation to rise to its mastery and solution; and now our great diplomatic leader in the executive chair suggests the pending property issue as the one worthy of immediate party adoption.

THE NEWARK TRAGEDY.

As we go to press we find the papers full of this sad affair between righteousness and iniquity. Below is a clipping, but I neglected to take the name of the periodical that published it, but it seems to hit the point:

Newark did not only lynch a man, but *lynched the law* last Friday night. When the mob held sway and carried out its purpose the interest of every citizen suffered. The city was dealt a blow from which it will take years to recover.

Here is another from our own *Medina Gazette*. I particularly enjoy reading it because its editor was, years ago, a pupil in my Sunday-school class. In commenting on the Newark affair he says:

These conditions tell an old, old story, namely: That the saloon business cures nothing for law; that the average rum-seller puts greed of gold and appetite for intoxicants above law, and stamps law beneath his feet. He does it everywhere and always. He doesn't expect to obey law if it affects his business adversely. He makes himself an outlaw to carry on his business. That's the fact, and it marks the character of the whole business of rum-selling. And last Friday at Newark, be it remembered that it was the saloon gang that began the appeal to force and lawlessness, and not the despised imported detectives.

I have several times in these columns called attention to the fact of "Duffy's whisky" being paraded as a medicine. We clip the following from the *National Prohibitionist*:

The mayor of Moss Point, Miss., was recently fined \$500 for selling a case of Duffy's malt whisky. His honor runs a drugstore, and in defense pleaded the "medicinal character" of Duffy's stuff; but the judge was wise, and his honor will think twice before he sells another case of fake medicine.

In regard to the Newark tragedy, there seems to be quite a little discussion at present as to whether it is just the thing to let a county decide whether a considerable-sized city shall go dry when a majority of the city is wet. My stenographer, W. P. Root, suggests that, if a city wants the privilege of "drinking with a clear conscience," the people of that city should pay all the expense arising from the use of drink within that corporation, and not call in all the county to help shoulder a burden to which it was opposed in the first place. Compel only those who vote wet to pay for the wetness and the wetness will soon dry up.

This city of Newark has about 30,000 inhabitants, and they voted wet by a considerable majority. But Licking County overruled the votes of the city. Now let the city and not the county pay the tremendous cost of this recent reign of anarchy, and also shoulder its deep disgrace.

Health Notes

By A. I. ROOT

ROLLED OATS FOR PEOPLE AND CHICKENS.

On p. 396, June 15, E. P. Robinson speaks about his boy of five and girl of three who have not used ten cents' worth of medicine in all their life. These children are in the habit of using rolled oats put in a cup of milk, more or less as a finishing-up for every meal. Well, we have recently had a 90-lb. sack of rolled oats from the Quaker Oats Co., Chicago, which has given us great satisfaction. In fact, we like it better than the oatmeal bought in pasteboard packages at the groceries, and it costs only about half what we pay for oatmeal in packages. I have been following the children mentioned by friend Robinson. At the close of almost every meal I fill a teacup with rolled oats, and then pour on just enough milk to moisten it fairly well. In this condition you can readily dip it up with a spoon, and chew it just as long as T. B. Terry and Fletcher recommend; and after you have chewed it long

enough to bring out the beautiful flavor, I think you will agree with me that it is a splendid addition to any meal; and you will soon discover that your strength will hold out better on this dish of oats and milk than almost anything else. A writer in the *Rural New-Yorker* seems to have come to the same conclusion. Here is what he says about it:

At the present time I can buy rolled oats in Chicago at \$2.18 per 90-pound bag, or less than the price of flour. They are 50 per cent richer in protein, and 600 per cent richer in fat, than flour, and we use them liberally in all our bread and biscuit, and uncooked with butter, cream, or cocoa, to the great advantage of our children at least. What do your rolled oats in packages cost per pound?

While on this matter of simple diet and uncooked food I want to give you the closing paragraph of a letter from my good friend and neighbor T. B. Terry:

I have worked long and hard over this diet question, to find what will give ideal results and not be unnecessarily narrow. And I assure you I am getting ideal results, and my diet is reasonably broad. I can not think a man is living who for years has done better than I have, he eating only nuts and fruits. You know I have been some ten years working at this. Actually, brother Root, I am in finer trim to-day than I was a year ago, and I was more than satisfied then. It is great—never an ache, never a pain; never even a bad feeling; able to work hard and long in my study right along, seven or eight hours, and not know what tired is. The apples you eat at night make a meal, but one that is probably digested easily in about an hour. If I want to do an extra day's work I sometimes eat only fruit for breakfast. You can cure your deafness and every thing else. It is God working through natural means, and he can do any thing. In years to come, God-fearing doctors will look back on needless operations, on mutilating the body he made, as they now look back to the days of bleeding.

T. B. TERRY.

THE CHAMPION HONEY-EATER OF THE WORLD; A MAN WHO CAN EAT A BARREL OF HONEY INSIDE OF A YEAR.

I read somewhere that in France they had got our common red clover started that had short nectar-tubes, the same as sweet clover. Is it true? If true, it should wake up that old bee war-horse, A. I. Root.

I began eating extracted honey Nov. 11, 1909, for kidney trouble, and have used a 60-lb. can every three months since then, using my third can now. It cured my kidneys. This is at the rate of 240 lbs. a year. I can eat 300 lbs. a year, I think, and may be more. I eat pumpkin pie (squash is better) to make me crave something sweet. Custard and cream pie are also fine. If you eat salt it will make you crave water. I live alone. I eat the honey myself. Am I the champion honey-eater? If not, I will try to eat 400 lbs. in a year. That would settle it. I don't want any one to eat more honey than I do if I know it.

Jonesboro, Ind., June 5.

C. A. NEAL.

Friend Neal, the matter of growing a strain of red clover with short nectar-tubes was discussed at considerable length in these columns something over 25 years ago. Our old friend E. E. Hasty, of Richards, Ohio, was quite enthusiastic about it, and gave a report of his experiments for two or three seasons. I have not heard any thing about it of late.

If I understand you, my good friend, you have already consumed two 60-lb. cans of honey. Well, such a remedy ought either to "kill or cure." If it cured your kidney trouble we certainly ought to rejoice; but I must confess that I can not exactly approve of pumpkin and custard pies for a man who is troubled with indigestion.

Gleanings in Bee Culture

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Editorial

WEDDING BELLS.

THE editor of the *American Bee Journal* was married to Miss Grace Hitchcock, of Kingston, Ill., July 2. GLEANINGS extends its best wishes and congratulations. Mr. and Mrs. York expect to attend the National convention at Albany, Oct. 12 and 13.

A CARLOAD OF BEE-KEEPERS TO THE NATIONAL CONVENTION.

In this connection we should mention the fact that Bro. York is getting up a carload of bee-keepers to go together to Albany from Chicago over the L. S. & M. S. Further details will be given later. Arrangements will doubtless be made for bee-keepers in the vicinity of Toledo and Cleveland to join the Chicago bunch. It will be a jolly crowd. We suggest that those who think they can attend the Albany convention and would like to join this crowd, notify Geo. W. York, 146 West Superior St., Chicago.

Hotel Kenmore, near the Union Station, at Albany, has been selected as headquarters of the convention. The meeting will be held in the Council Chamber of the City Hall, Albany.

EUROPEAN AND AMERICAN FOUL BROOD; SHOULD THESE NAMES BE SHORTENED?

ELSEWHERE in this issue, in one of the Straws, Dr. Miller suggests that the names "European foul brood" and "American foul brood" be shortened to "yellow brood" and "foul brood." While the qualifying adjective *yellow* would be more accurate than "black" as describing the European type of the disease, yet it is not accurate for all stages of that malady. When Dr. Phillips suggested the qualifying adjectives "American" and "European" he did so that he might retain the name "foul brood" for both diseases. In view of the fact that many of our State laws mention only foul brood, and no other disease, it would have been a serious mistake to adopt a new name that would have eliminated from the action of our laws one of the most serious diseases that ever got into this country. When we say American foul brood or European foul brood we use names that will be included in any State law. We have already tried to adopt two different names for the disease that first made itself manifest in New York.

To attempt to adopt still another name at this stage of proceedings would be a serious mistake. Already confusion exists, and to throw in the third name would be to make confusion worse confounded. If we continue to use the names "American" and "European" we shall soon have the atmosphere cleared up. One of the leading bacteriologists of Europe not only has confirmed the findings of Dr. White, of the Bureau of Entomology, but has adopted the names European and American foul brood. Some 30,000 copies of the ABC and XYZ of Bee Culture recognize these names, besides all the government bulletins and thousands and thousands of pages of current bee literature. Even if it were possible to adopt the name "yellow brood," only one word is saved, and that word can not be a very serious tax on the publisher and his correspondents. Let us stick to these names and thus avoid further confusion.

THE STRENGTH OF THE HONEY-FLOW AND ITS INFLUENCE ON THE SWARMING PROBLEM AND QUEEN-CELL BUILDING.

SOME years ago, when we were in Texas, we were quite surprised to learn that the bee-keepers of that section of the country were not troubled very much with swarming *after* the honey-flow had gotten well under way; but they do have plenty of it during the preliminary honey-flows when the yield of nectar is light; but after the mesquite and guajilla come on, the honey-flow is strong enough to stop swarming altogether. Mr. Chalon Fowls, of Oberlin, Ohio, has observed quite the same thing—that a light flow is apt to cause furious swarming, while a heavy one will check it if not stop it altogether. It would, therefore, be apparent that, when there is plenty of honey to be had, the main idea of a colony is to gather honey, not to increase.

We have an exemplification of this fact at one of our queen-rearing yards where we have a number of what we call cell-building colonies. Just before the honey-flow, and when we were feeding these cell-builders, he could get all the cells he desired; but after the honey-flow began, it was so heavy that each of them was surfeited with honey. What happened? Cell-building stopped immediately. Said Mr. Pritchard, "When there is a heavy honey-flow I can't do as much with our cell-builders; and this explains, Mr. Root, why I can not deliver to you as many queens a day as when the

honey-flow is light or when there is no flow at all. I don't want a heavy yield of nectar for cell-building. I should, in fact, very much prefer to have no honey come in at all, because then I can *regulate* the supply of food just fast enough, and no more, to keep cell-building at its best."

SOME EXPERIENCES OF THE EDITOR IN FOUL-BROOD-INSPECTION WORK.

DURING the last few days we have been getting some real experience in helping out the Ohio foul-brood inspectors. We have driven from 40 to 75 miles in a day with a machine, carrying the inspectors about from bee-keeper to bee-keeper. If there is any one fact that was impressed on us it is this: That foul brood finds an easy lodging-place among the old-fashioned bee-keepers, who either have box hives or old hives of an antiquated pattern—so old, in fact, that there are cracks all over them. Of course, some of these farmers do not take any bee-paper, and they probably do not even read the apiarian department in their agricultural papers, if they read any paper at all.

At two or three yards we found where the bees had died the previous winter. Examination showed the characteristic scales of foul brood on the combs. The bees had, no doubt, been so weakened by the ravages of this disease during the previous summer and fall that they were unable to withstand the winter's cold. The result was, there were several hives in the spring containing honey in the combs, with no live bees in. Neighboring bees found these hives, of course, and robbed them out and thus scattered foul brood right and left. We ran into one section where fully 99 per cent of the farmers had foul brood among their bees; and we found not a few of them having empty hives with foul-brood combs in them, all of which gave evidence of having been robbed out the previous spring. No wonder their cry was, "Bees don't pay like they used to." In every case the farmers were willing to be shown what to do, and to comply with the provisions of the Ohio law, and scarcely one of them knew he had the disease.

THE GRADUAL ELIMINATION OF THE OLD-FASHIONED FARMER BEE-KEEPER.

We have about come to the conclusion that American and European foul brood will eliminate the don't-read-the-paper class of farmer bee-keeper. It may take several years before it is accomplished; and while we are sorry to have these people suffer loss, the result will be very salutary to the specialist and progressive farmer bee-keeper who read the papers. American foul brood has no terrors for the specialist bee-keeper; but the ignorant and haphazard farmer bee-keeper must either burn up or otherwise destroy all his old hives and fixtures. European foul brood is much more difficult to eradicate; but we feel confident that, when we come to know more about it, the expert will handle one as well as the other.

A PRACTICAL SCHEME FOR KEEPING DOWN SWARMING AT AN EXTRACTING-YARD; DO BROOD-COMBS AFFECT THE COLOR OF HONEY TAKEN FROM THEM?

As a general rule, it is not difficult to handle swarms at extracting-yards; but under some conditions, at least, there will be some swarming, especially if moderate-sized hives are used. In helping (?) Mr. Fowls to extract, as mentioned on page 474 in last issue, we noticed a good many of his combs that had brood reared in them to a greater or less extent. We asked him if these did not have a tendency to darken his honey. "No," he replied, "not nearly so much as I had expected. In reading over recent articles in some of the bee-papers, I noticed that one or two writers said they had been very successful in keeping down swarming at the extracting-yards by letting the queen have access to the extracting-supers during the *fore part* of the honey-flow; then, as the season *advanced*, putting on honey-boards to confine the queen to the lower chamber. In the mean time brood hatches in the extracting-supers, when the cells are immediately filled with honey. This," continued Mr. Fowls, "practically eliminates all swarming. I have been testing this the past season or two, and I find it works admirably. I have not been able to find that brood-combs affect the color of the honey if they are not too old and black. What is more, the cocoons in the cells stiffen the combs, and this is quite an advantage while extracting and uncapping. These reinforced cells during the process of uncapping make it easy, as you see, to slice off the cap-pings."

Mr. Fowls went on to explain that most of the swarming takes place at the fore part of the season. If the queen has unlimited room at that period of the flow there is not likely to be any swarming. This has been our experience at Medina, at least. "Now, then," said Mr. Fowls, "if the honey-boards are put on when the honey-flow is at its height, the brood hatches out, the cells are filled with honey, and at the close of the season we have nothing but solid combs well capped."

It should be remembered that Mr. Fowls is a bottler of fine honey, and takes pride in having his goods look clean and bright. It would be apparent that he could not tolerate any plan of extracted-honey production that would darken his honey. As we have been "helping" him to extract a number of times, we can bear testimony to the fine quality of his honey.

THE ADVISABILITY OF PUBLISHING NEW METHODS OF CURE FOR THE BROOD DISEASES.

ONE of our best correspondents, and also a foul-brood inspector, seriously questions the advisability of publishing these new methods of cure for brood diseases. He refers particularly to the articles by Henry Stewart, given on pp. 415, 445. He says that

in his vicinity bee-keepers, instead of following his instructions, will follow those made by Mr. Stewart; and if that treatment is not effective it will only delay the elimination of disease or its control. We admit that there is some force in his argument. On the other hand, it is the province of a trade journal to discuss some of these new methods of cure; otherwise we should make no progress. Henry Stewart is one of the best bee-keepers in the country; and he claims to have given his treatment a thorough trial. The old McEvoy treatment is somewhat expensive, and involves a large amount of work, and under some conditions it interferes with securing a crop of honey. In every case it means the loss of a lot of good brood. The Baldridge treatment and the Stewart treatment will save all this brood. At the same time, the bees go on uninter-ruptedly securing a crop of honey.

On page 531 Mr. Geo. M. Steele questions whether Mr. Stewart really had American foul brood. Mr. Steele and a good many others who have had experience with brood diseases, are very emphatic in saying that larvæ diseased with American foul brood can not be cleaned out of the cells, nor can the combs be made safe to use again. E. W. Alexander was also of this opinion. Mr. Stewart then stands alone, apparently, in his belief. We should be glad to hear further from Mr. Stewart as to whether he is positive that the disease in question is American and not European.

Right here the question may be raised whether we did the wise thing in publishing the Alexander treatment for European foul brood. Alexander claimed that he drove the disease entirely out of his yard. In looking over his apiary of over 700 colonies a year after we can personally testify to the truth of the statement. But the question has arisen in the minds of some whether the disease had not already run its course in that vicinity. Possibly. But Dr. Miller, in some recent correspondence, is inclined to feel that there is a great deal of merit in the Alexander treatment, and says there is no European foul brood, or at least very little of it, in his yard.

Now, then, through careful and wisely conducted discussions and experimentation on the part of those competent to do the work we may get hold of some simpler and cheaper treatment for these diseases. The facts are that European and American foul brood are spreading over the United States in spite of the McEvoy treatment. One State inspector, with an excellent law back of him, wrote us a few days ago, stating that he was somewhat discouraged over the outlook; that, do every thing he could with his corps of inspectors, the diseases were raging as strongly as ever. Then incidentally he mentioned that the McEvoy treatment was expensive, and many bee-keepers were disinclined to follow instructions, and others made bungling work of it. If we can get a treatment that is better, should we not make the effort to do so?

CROP REPORTS.

THE reports of the honey-crop that have come in since our last issue have been more and more conflicting. The fact that widely differing reports are received from the same State shows that local conditions affect the honey-flow considerably, and that only a few hundred miles from a locality visited by a drouth there may be bountiful rains. We realize that two or three reports for a whole State do not tell the whole story by any means. The ideal way, perhaps, would be to have local associations, possibly the State associations, collect reports from their members, and then send summaries of these reports to the bee-journals for publication. In this way a much more accurate and true statement of actual conditions could be revealed. A good many bee-keepers do not seem inclined to make public the extent of their crop; but although we do not believe it is a good plan to exaggerate the prospect for a crop (see p. 526), we believe the only fair way to all concerned is to make public the extent of the honey crop over the country as soon as it can be determined with any degree of accuracy.

It now looks as though California would have a very light crop. In Idaho and Nevada there will probably be good average crops. In certain sections of Colorado there will be a fair to average crop; but as a State, Colorado's crop will be light. In New York the reports, most of them, indicate a good crop. We will let the reader draw his own deductions from the following somewhat scattering reports that have been received during the last two weeks. A part of them, as will be seen, are in answer to the following questions:

1. Condition of bees?
2. Climatic conditions (favorable or not)?
3. Are bee-men suffering from drouth or wet weather?
4. Prospects for honey crop?
5. Compare prospects with last year, same date.
6. Percentage of full crop harvested to date?
7. Compare yield with last year, same date.
8. Kind of honey produced in your locality, comb or extracted?
9. Color of honey produced this year?
10. Price local dealers are paying for honey?
11. Price bee-men are holding for?
12. Is the crop moving readily?

Honey crop a total failure this season. Last year my two yards gave an average of 208 lbs. per colony, 99 per cent of which was extracted and the rest comb honey.

Paicines, Cal.

No rains this season, but honey is being extracted just the same. Can not tell where it comes from.

Cranbrook, B. C., Can.

1, good; 2, favorable; 3, yes; 4, good for this particular locality; 5, better; 6, 100 lbs. per colony; 8, extracted; 9, light; 10, 10 cts. per lb.; 11, don't know; 12, local trade good.

Bobcaygeon, Ontario, Can.

1, fair; 2, too wet; 3, wet weather; 4, rather poor; 5, not half as good as last year; 6, 50 per cent of comb; 7, same as last year; 8, both comb and bulk comb honey; 9, white to dark.

Lawrenceville, Ga.

Average honey-flow here, but in some parts it will be much below.

Parma, Idaho.

Good crop.

Boise Valley, Idaho.

1, good; 2, at first unfavorable but favorable now; 3, neither; 4, fairly good; 5, much better; 6, about 60 per cent; 7, three times as much this year; 8, comb honey; 9, white; 10, not buying at present; 11, 15 cts.; 12, slow.

Beardstown, Ill.

1, very good; 2, very dry, otherwise fine; 3, very dry—very thing dried up; 4, probably half a crop; 5, much better than last year; 6, about 60 per cent; 7, about 80 per cent better; 8, very little produced, but mostly comb; 9, white; 10, 15 to 16; 11, very little here—about enough for the home trade.

Genoa, Ill.

1, poor to good; 2, too wet; 3, wet weather; 4, not very good; 5, not a pound stored in the supers yet; 6, nothing; 7, last year the same; 8, comb; 10, 15 to 20 cts. per lb.; 11, about 20 cts.; 12, no crop to move. The prospect from goldenrod is good. We have also smartweed and Spanish needle in the fall.

Percy, Ill.

1, splendid; 2, same till middle of July; too dry since then; white clover all dried up; 3, yes; 4, 100 lbs. from swarm hived May 10 on full sheets of foundation; will finish up 200 lbs. of comb honey if it rains; 5, 1909 poor year; 6, 80 per cent; 7, not much to compare; 8, both clover and white, catnip, amber; 10, comb, 20 cts.; extracted, 12½; 11, same; 12, yes.

Jonesboro, Ind., Aug. 6.

The honey crop here is light—only about 40 per cent; and honey is so thick it is almost a nuisance to work with it. It is the thickest clover honey I have ever had to extract in my experience of thirty-five years.

Cascade, Iowa.

1, fine; 2, favorable; 3, good in the eastern part of the State; 4, no prospects; 5, good prospects last year; 6, none; 7, 90 per cent poorer; 8, comb and very little of it; 10, 12 to 17 cts.

Ossawatimie, Kan.

1, good; 2, July, wet; 3, bees are suffering from wet; 4, about a fourth of a crop; 5, better than last year; 6, about one-fourth—flow is over; 7, better than last year; 8, comb honey; 9, water-white; 10, 14 cts.; 11, 15 cts.; 12, slow.

Brookville, Ky.

1, very good; 2 and 3, much rain in May and June, but less in July; 4, white clover very abundant; 8, extracted with some bulk comb honey; 9, clear amber; 10, 15 cts.; sold in bottles from milk-wagon at 40 cts. a quart; 12, crop promptly disposed of. I have been educating our customers to buy extracted honey at a good price.

Hopkinsville, Ky.

1, poor; 2, good; 3, drouth; 4, fair; 5, two-thirds; 6, two-thirds; 7, two-thirds; 8, extracted; 9, white and very thick; 10, 9½ cts.; 11, 9½ cts.; 12, yes.

Marion, Mich.

No honey this year. Worst season ever known.

Fergus Falls, Minn.

About 2500 lbs. extracted honey from 40 weak colonies, and increased to 63 colonies. Season would have been good if there had been more rain.

Mora, Minn.

I had 5220 lbs. of extracted honey from 77 colonies, and 1000 lbs. more on the hives ready to come off.

Raymore, Mo.

1, good; 2, yes, very much so; 3, no drouth at any time; 4, white clover is over; 100 to 200 lbs.; 5, better; 6, ¾; 7, 50 to 100 lbs. better; 8, both; 9, white, the very best; 10, 9 and 10; 11, no holding here; 12, yes.

Marceline, Mo.

Frost first five nights in June, then hot and dry, and every thing dried up; no honey in alfalfa; will have to feed for winter—the first real failure I have seen in this country.

Lewistown, Mont.

Weather very dry and hot. Honey-flow light except in localities having much alfalfa.

Humboldt, Neb.

Some white clover showing since last rain, but honey-flow is not large this year.

Canandaigua, N. Y.

Honey-flow best in three years.

M. L. L. town, N. Y.

1, fair to good; 2, too dry; 3, drouth; 4, short; 5, about one-fourth crop; 6, can't tell; 7, better than last year; 8, comb and some extracted; 9, white clover with no honey-dew as yet; 10, 16 cts. wholesale; 11, can't tell; 12, fairly well.

Mechanicsburg, Ohio.

1, good; 2, favorable; 3, too dry; 4, poor prospects; same last year; 6, very light crop; 7, same last year; 8, comb honey; 11, 15 to 20 cts.; 12, yes.

Gaston, Oregon.

1, medium; 2, favorable; 3, neither; 4, very poor; 5, about half as much; 8, both; 9, white. We have had two seasons of drouth, but prospects for 1911 are better.

Bradford, Pa.

Bees have done very little. No surplus honey at all, and have had to feed. If we have rain we shall get some honey from buckwheat.

Dayton, Pa.

White-honey crop very short, but better than last year.

Erwinna, Pa.

Wonderful honey-flow for the last five or six weeks. Splendid crop of white clover. Warm showers every few days.

Julian, Pa.

Honey crop almost a failure because of too little rain since the 28th of May. No prospects for further flow as yet.

Sabinal, Texas.

1, good; 2, good until June and bad ever since; 3, drouth; 4, bad; 5, none; 6, 25 per cent; 7, none; 8, 75 per cent extracted, 25 per cent comb; 9, white; 10, 10 cts.; 11, don't know; 12, yes.

Vigo, Texas.

Honey-flow best on record to date, with good prospects for the rest of the season.

Heber, Utah.

Honey crop almost entire failure on account of cold weather in May and June.

Hiltons, Va.

Half a crop of honey.

Markham, Va.

1, good; 2, favorable; 3, neither; 4, not very good, as white clover did not yield on account of too much rain while it was in bloom; prospects from sumac very good; 4, about the same; 6, don't know; 7, not as good as last year; 8, comb honey; 9, white; 10 and 11, don't know; 12, no crop to move.

Paige, Va.

1, good; 2, good at first, then bad; 3, both; 4, poor; 5, about two-thirds; 6, about one-half crop; 7, about two-thirds as much; 8, comb; 9, white at first, and the rest dark; 10, about 10 cts.; 11, all they can get; 12, yes, although very light for shipment except for local trade.

Washington, Va.

Half a crop.

Seattle, Wash.

Honey crop good, and of excellent quality. We shall have better than the average yield.

North Yakima, Wash.

1, never better; 2, favorable; 3, rather dry; 4, never better; 5, 100 per cent better; 6, extra crop harvested to date; 7, double that of last year; 8, extracted; 9, very light with no dark honey; 10, 8 to 9 cts. for extracted, 16 for comb; 11, no honey being held; 12, fairly active.

Wallula, Wash.

One-third of a crop. No rain since May 15.

Forest Junction, Wis.

1, good; 2, not; 3, drouth; 4, poor; 5, 25 per cent; 6, 90 per cent; 8, extracted; 9, white; 11, 9 cts.; 12, no honey on the market.

Loyal, Wis.

1, below average; 2, unfavorable; 3, extreme drouth; 4, poor; 5, not as good; 6, one-third crop of comb, no extracted this year; 7, small; 8, both; 9, white; 10, commission men selling at 20 cts. with 10 per cent commission; 12, yes.

Milwaukee, Wis.

Honey crop almost total failure.

Mount Horeb, Wis.

Honey crop scant; 2000 lbs. secured from 35 colonies; last year 1500 lbs. from the same number of colonies; two years ago, 5000 lbs.

Random Lake, Wis.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

THE SHUT-DOWN of clover, July 10, was for keeps, leaving only half the crop I expected. Drouth here is terrible, although it rains all about.

BIENEN-VATER, p. 166, gives a picture of "An American Apiary in Hungary." It belongs to Karl R. Mathey, formerly a so-journer at Medina, and special mention is made that from a single Langstroth hive he harvested 286 pounds of honey—presumably extracted.

IF FOUNDATION can be profitably dispensed with at any time, one would suppose it would be in producing bulk honey. But Louis Scholl says, *American Bee Journal*, 188, that he has learned that it *pays big* "to use full sheets of foundation at all times, both in supers and brood-chambers."

IT HAS BEEN SAID that, in a state of nature, bees always build comb with an angle of the cells pointing downward. Two writers, *Leipz. Bztg.*, 95, dispute this. One very deep comb started with cells horizontal at bottom, changing after a time to cells with angle at bottom, and further down changing the second time. [I suppose you mean by the cells "pointing downward," slanting downward from the outside of the cell to the base.—ED.]

FR. LEUENBERGER, *Schw. Bztg.*, 143, says in substance, "In America and elsewhere Italians are said to be least susceptible to foul brood. Just the contrary is shown by our statistics. South Switzerland, where Italians are native, is precisely where foul brood is most devastating." Which agrees with what I said. Blacks more vigorous than Italians in Switzerland, hence more immune; Italians more vigorous in America, hence more immune.

EDITOR HUTCHINSON says "that in introducing queens we can entirely disregard odor as a factor in the problem." The fact that in some cases we may introduce a queen directly is not satisfactory proof that odor cuts no figure. In general, time is an important factor in introducing, and what bearing has time except with regard to odor? Yet in those cases where a queen is introduced without any time being taken, one can hardly dispute that "we entirely disregard odor."

THE ONE THING especially to look for when trying to spot European foul brood is the yellowish larva curled up in the bottom of the cell. As Dr. Phillips has suggested, "black brood" is a misnomer, "yellow" being more appropriate. Considering this, considering the inconvenient length of the names "American foul brood" and "European foul brood," and considering the con-

fusion from calling both diseases "foul brood," why not call the European kind "yellow brood" and the other kind just "foul brood"? [See editorials.—ED.]

I WONDER how many still use wooden sticks to wedge sections in supers. The more I use super-springs the better I like them, and wouldn't go back to the stick-wedges if I had to pay three prices for the springs. I find that one spring to the super works well. It is so much easier to put in the springs, and so much easier to take them out; and they're on their job all the time, never letting go as the sticks sometimes do. There's another item, which alone would make me use springs. The sticks form a pocket in which a lot of bees get, and it is almost impossible to dislodge them when one is taking off supers. The springs form no such pocket.

THAT HIVE-TOOL that grows at Medina is a good tool. The bend at one end serves fairly well as a hook to lift out a dummy, although I don't like the straight edge at the other end so well as a curved edge for prying up supers or covers. [The great majority of bee-keepers would not like the rounding end of a tool as well as the way it is, and that is square. A rounding end is better for prying hives apart, but is not satisfactory for scraping—especially for scraping up in the corners; but you say the other, or hoe end, will do that better. Yes and no. It is our opinion that *both* ends should be suitable for scraping, on the principle that there are many men of many notions.—ED.]

"DURING the blossoming period there are so many blossoms that the bees do not go far from the hives, so we need hives all over the orchards," p. 438. I wonder! If a square mile of orchard has 100 colonies planted at the center, will not the fertilization be just as well done as if the 100 colonies were scattered all over the square mile? [From all the evidence in hand, and from some observation on this particular point, we believe we are correct when we say that the 100 colonies located in the center of a square mile of orchard would not do as good work in fertilization as if the colonies were scattered. We are convinced of this: That in the height of a *strong* flow bees do not go much more than a quarter of a mile. As the flow becomes lighter they go further; and when it ends up they may go two or three miles. Taking into consideration that there are likely to be only three or four good flying days in a fruit-blooming season, the inference is fairly drawn that those trees nearest to the bees will be pollinated better than those half a mile away. Moreover, bee-keepers can learn something from their fruit-growing neighbors. Some of them now say that a bee-yard half a mile from an orchard does not begin to do as good work as a few bees right in the orchard. Perhaps ten colonies would be sufficient in an ordinary farm orchard. In that case the maximum flight would not be more than an eighth of a mile.—ED.]

Siftings

By J. E. CRANE, Middlebury, Vt.

Two days of pleasant weather, and many colonies had begun work in sections, and in three days they were storing surplus honey.

What man does not envy the contented bee-keeper when he sees the picture of Dr. Miller on the May 1st cover of GLEANINGS as he watches the flight of his bees to and from the sweet-clover field?

I am glad Mr. Scholl is going to try a queen-rearing apiary, page 246, April 15. I believe it will more than pay. We can buy good queens; but I believe that, for business, we had better raise most of them if we can get the time.

Reference has been made in recent numbers of GLEANINGS that the census this year will not do our industry justice, as the crop was unusually small in 1909. True; but we can from it estimate somewhere near what a full crop would be.

Non-swarming devices still increase, as we see from page 295, May 1, and it seems evident that we are making progress. A device that would not fail more than one time in twenty would certainly be a very desirable acquisition.

Our friend Wesley Foster is quite right in thinking corrugated drip-boards are "far away ahead" of wooden drip-sticks; and I believe the time will come when bee-keepers will come to think cases of corrugated board "far away ahead" of wooden ones.

I thoroughly enjoy the discussion on automobiles by Henry Stuart, and the editor's footnotes on page 316, May 15. I believe the automobile has come to stay, and will play an important part in extensive bee-keeping in the future—indeed, it will be considered a necessity.

Page 281, May 1, Mr. Holtermann recommends feeding late a thick syrup for wintering. Not so long ago bee-keepers were advised to feed early so the feed could be stored and capped over while yet the flowers were in bloom. I believe Mr. H. is right. Late in November last I assisted a neighbor in feeding his bees and bought the yard this spring, and found the bees in fine condition.

You say, Mr. Editor, page 278, May 1, that there is no law against spraying fruit-trees except in New York, Ontario, and pos-

sibly Michigan. You forget that we have such a law here in the Green Mountain State. Some of the fruit-growers, when they found it out, were "awful mad," and thought the bee-keepers had stolen a march on them; but under the instruction of Prof. Waugh they learned it would benefit them as well as the bee-keepers.

That photo, page 322, May 15, certainly looks natural. The only criticism I should make is that Mr. Scholl should have placed in the picture some cans without any case covering them, for we receive them that way. Say, Mr. Scholl, why don't you borrow the hammer the editor of GLEANINGS uses to hammer into the heads of bee-keepers the fact that honey should be sold early, and drive home the necessity that honey should be packed more securely when sent by freight long distances? Your advice, p. 310, if followed by bee-keepers, would pay for many years' subscription for GLEANINGS.

We kept hundreds of colonies alive by feeding, and found that a good colony required from $\frac{1}{2}$ to $\frac{3}{4}$ lbs. of solid honey per day, or thick sugar syrup to keep them going. We found nothing so convenient or satisfactory to feed as well-ripened honey, granulated solid, that we had stored in teigallon can with open tops. The nice thing about it was that we could ladle out the amount a colony needed with a stout wooden ladle, and lay it on top of the frames without any special feeders; and it did not stir the bees up nor set them to robbing to any extent as a thin sugar syrup would do.

Few things have interested me more than the article by Samuel Simmins, page 285, in regard to spring dwindling and longevity and stamina. If Mr. Simmins has secured all he claims by breeding, it is certainly a most interesting and valuable fact, and I see no reason why it may not be as he states. We know that length of life is a family trait or characteristic among human beings, and one that is inherited by children from parents. Longevity, as Dr. Miller has shown, if only increased in bees a few days, is of exceeding value in securing a crop of honey. To this add stamina, the ability to work hard without exhaustion, and the productive power of a colony of bees is greatly increased. As it is with most of our bees, if we shake a colony on to dry combs during the honey-flow we find in two weeks well nigh half the bees gone; and before the brood begins to hatch, the force is greatly reduced, unless honey is very abundant. I have been in the habit, some years, of giving such colonies, after a week or ten days from the time of shaking, a comb or two of hatching brood, which greatly adds to their efficiency and filling of supers. Where honey is very abundant and easily gathered, bees live much longer during the working season.

Bee-keeping in the Southwest

By LOUIS SCHOLL, New Braunfels, Texas

ASCERTAINING THE SOURCE OF HONEY BY SCENT.

It is possible in many instances to tell from what the bees are gathering nectar without opening the hives or knowing upon what plants the bees are at work. Recently we arrived at one of our apiaries, 180 miles away, late at night. We did not know what the bees had been doing here since our previous visit five weeks before; but going through the yard we "scented" that a good honey-flow was on. The evaporation taking place in the hives gave off a strong scent which filled the air and was recognized at once as that from horsemint. Our cotton honey has a scent of its own, and one can easily detect it in the apiary during its yield. It is almost identical with the smell given off by the leaves if these are bruised by rubbing them to pieces. I know the scent of a good many sources of nectar, and can tell when the bees are working on certain plants. I have been told that a buckwheat honey-flow, one of basswood, and several others might be told in the same way; and from the little experience I have had with buckwheat and sweet-clover honey I am sure these could be easily detected.



BEE-STINGS FOR RHEUMATISM.

Since my article on this subject appeared in the *American Bee Journal*, p. 236, July, 1909, numerous comments and criticisms have appeared in not only that journal but in this one as well. I cited various instances where stings as a cure for rheumatism came under my own observations. One of the most severe criticisms appears in the October *American Bee Journal*, p. 365, together with another. The former one was written by Dr. A. F. Bonney, of Buck Grove, Iowa, who later also wrote an article on the same subject for *GLEANINGS*, p. 784, Dec. 1, 1909. There is no doubt that the writer of the article was well pleased about it, but I have been "laying low" and "collecting more evidence" in defending my side of the question as first cited in the *American Bee Journal*, which received such severe criticism at the hands of Dr. Bonney. For lack of space, however, none of this has yet appeared in that journal. Be this as it may, these proofs are sufficient to show that the doctor's criticism and his point of argument do not settle the case as absolute.

Right in this connection we find, p. 403 of the July 1st issue of this journal, an editorial which gives Dr. Bonney credit as having "stood almost alone in his contention that bee-stings will not cure rheumatism." Then follow two articles that show that

"there *is* something in it." I can present several very similar cases that will substantiate this very thing.



THE TEXAS HONEY CROP.

So far the honey crop has been quite fair in most localities; but as a whole it is not a bumper crop. While the quality in most localities was fine, in some the honey was darker than usual. Taking it all in all, the Texas crop so far has been good enough, especially since the prices obtained have been from one to two cents per pound above the average of any previous year, extending over quite a long period. In addition to this the demand has been strong, and the honey moved as fast as it was ready for shipment.

Despite these facts, there have been a number of parties again this year, as in all previous years, who sold their honey below the regular market price. A few do not make any difference between the price paid by the wholesale dealer and by the retailer or consumer when they ship direct to them. This is not right. It is an injustice to the dealer, who must sell at a higher price after he buys the producer's crop of honey, and it hurts the producers, especially those who are trying their best to maintain a good market price for their honey.



PAINTING THE HIVES, ETC.

Those of you who hire help for the busy season and then dismiss this help after the honey season is over can do a wise thing by keeping such help a month longer for the express purpose of "painting up" every thing about the place from hive to house. There is nothing that freshens up things more than a nice coat of paint. It revives and brightens up every thing to which the paint is applied. Besides bringing more "life" into the things painted, the whole surroundings appear to have a kind of renewed life in them, and this in turn has its effect on the bee-keeper and others around and about such surroundings. This is not the only advantage. Things that are well painted, and kept well painted, naturally last longer. No use trying to get around that. This is especially true where climatic, atmospheric, and other conditions have an unfavorable effect on the unpainted materials, whatever they may be.

In our hot climate here, every thing is affected by the heat. Wood checks and splits, warps and twists all out of shape unless kept well painted. This is a serious consideration when it comes to bee-hives, buildings, etc. In a wet locality wood decays; but paint keeps out the moisture. So it pays to "paint up" everything, once a year at least. Our reason for doing this after the honey season is that, first, we can keep the help a little longer for it; and, secondly, every thing then goes into the long wet winter season weather-proof.

Conversations with Doolittle

At Borodino

WHEN TO COMMENCE PREPARATIONS FOR WINTERING.

"Mr. Doolittle, I commenced two years ago with five colonies and now have seventeen. Mr. Jones was telling me the other day that you believed in early preparation for winter."

"Jones was right. I consider the months of August and September the months in which to prepare bees for winter. In my early bee-keeping I put this off as late as December. But after a little there came a winter in which the bees did not have a chance to fly for five and a half months, at the end of which I had very few colonies left. I then wrote to Mr. E. Gallup, a prominent bee-keeper at that time, telling him of my troubles, and he advised me to prepare the bees for wintering not later than September 20; and if I did not have a surplus in that month, to prepare in August. I have kept doing so ever since, doing the most of this preparation in August, except as there was a promise of stores being gathered the fore part of September, when the stores part was left till about September 15 to 20. I found that such early preparation paid well, for since then the bees have been kept confined for over six months, and yet have come out in good shape."

"That is an awful siege for them. How do you account for it?"

"By beginning thus early to put all in readiness as far as possible, the bees are given a chance to get their stores for winter placed just where they wish them, so that, by the middle of October, they are ready to go into that quiescent state so conducive to the best results."

"What do you do by way of preparation?"

"I begin on row one, at the first hive. This is opened, each comb removed, and the amount of bees, age of queen, square inches of brood, and pounds of honey, carefully noted."

"How can you tell the number of pounds of honey by opening the hive?"

"By weighing a few combs of varying degrees of fullness till the eye gets so trained that the weight of every comb can be judged with an accuracy which will not vary half a pound to the hive. The number of square inches of brood is gotten by measuring a few different-sized patches, when it is easy to estimate afterward."

"Do you think that as good as weighing the whole hive?"

"I consider it much better. While weighing is much better than guessing by lifting there is a chance, where a colony has a poor queen or has become queenless, that the combs may be stored nearly full of pollen, when the probability for safe wintering is at a minimum all around. This condition

neither the scales nor the lifting process reveals at all. To be sure of all these little kinks, which, put together, have all to do with our success, the hive must be opened, and, when open, it is but a moment's work to make sure about the stores."

"But how do you tell the age of the queen?"

"By looking at the last year's record, if her wings are clipped; if not clipped, I know she is of the present year's rearing, as the wings of all my queens are generally clipped in fruit bloom."

"And how about the bees?"

"The amount of bees is told, and their age, by observing them on the combs. If two-thirds of the combs are well covered, and the light-colored and fuzzy very young bees are numerous, I know that they are all right."

"How do you keep track of all the different hives?"

"I carry some section material with me; and where I come to any hive where the old record is full I use a new one. After filling out it may read something like this: 'Aug. 23, 10; H. 29 lbs.; B. 500; Q. 09; B's O.K.' If the hive is chaff-packed, this piece of section is slid partly down in the chaff; or if in an unpacked hive, I put it in some convenient place where it will not become obliterated. In this way I have the record of that hive for years, as in some cases there are three and four pieces of sections slid down in the chaff."

"I suppose that any colony having such a record as you have just told me about, you consider in good shape for winter."

"Yes. But if it had as little as 25 lbs. of honey it would still be all right, or as little as 20 lbs. will do very well where the bees are to be wintered in the cellar."

"If any are found deficient in any way, what then?"

"This is noted on the section; and when the hive is closed a stone is placed on the center of the top, which tells me that it needs looking after; so when all are looked over, those having the stones on are looked after again, and whatever is lacking is supplied. That is, if the queen is poor she is killed, and a good young vigorous one supplied, so the colony may be prosperous the next spring. If brood or bees are lacking, and there is not time for a young queen to rear brood, frames of brood from a weak colony or nucleus are given. If honey is lacking, and there is still a prospect that more may be gathered, I wait till Sept. 20; and if at that time the lack is not made up, frames of honey, set away as a reserve during the honey-flow, are put in to supply what is needed."

More Testimony Against Japanese Buckwheat.

This (Sullivan) is a buckwheat county, and some twenty years ago nearly every farmer who raised buckwheat (myself included) tried the Japanese variety; but it proved a failure when compared with the other varieties, and I do not know of a farmer around here who has raised any of it during the past ten years.

Parksville, N. Y., July 11.

A. W. SMITH.

General Correspondence

REMOVABLE SCREEN BASKETS IN AN UNCAPPING-CAN.

Some Refinements of the Details in a Modern Extracting-room.

BY O. B. METCALFE.

On page 403, July 1, the editor describes the McIntyre uncapping-can now used by Mr. Townsend. We used that type of uncapping-can for two years. The one we used was 2½ feet wide by 8 feet long. It was much better than the small round cans; but this spring I got to work and made one that is still better. It consists of a rectangular tank 2 ft. deep, 2 ft. wide, and 3 ft. long. One man uncaps at each end, and the cappings fall into four screen baskets made of galvanized dog-screen with half-inch meshes. The baskets are held apart from each other and from the tank all around by ½ × ½-inch strips, all running up and down, so there will be nothing to catch when the baskets are lifted out one at a time, by the turn-down bales on either side of them. Around the top of the baskets a half-inch wooden rim keeps the cappings from falling down between the baskets where they would hinder the drainage which takes place through all four sides of each basket and the bottom. The basket bottoms are made loose so that they can be used to shove out the cappings when the baskets are taken out and inverted. The four baskets occupy all the space in the uncapping-can except the half-inch drainage space, and they will hold all the cappings two men can cut off in a day. Thus they may have the night to drain and be lifted out in four well-drained cakes the next morning. In the very bottom of the tank a drain-pipe connects with a hose which carries the honey to the settling-tank on the ground beside the wagon.

Between the uncapping-can and the extractor stands a comb-box made of galvanized iron with a screen platform in the bottom of it, and a drain-hole also. This comb-box holds some 60 frames, and thereby allows the uncappers to separate the combs into groups of tender combs and strong ones, or light and heavy. This greatly helps the man at the extractor. By the way, the man at the extractor needs his combs classified when the uncappers get an easy run and get to passing him honey at any thing better than a thousand pounds per hour. He also needs a small hopper attached to the top of each basket, which I hope The A. I. Root Co. will soon get to putting on their frame baskets. Filling the passing baskets with the power partly on, a small hopper on each basket would be a great saving of time.

For the benefit of the man at the extract-

or the combs should all be set in the comb-box with the top-bars turned one way. He can more quickly get them in the extractor turned one way; and as he takes them from the passing baskets with his left hand and passes them back of him on to the platform with his right hand they will fall all one way so they can be picked up in bunches. To do this with the extractor moving pretty fast, the operator should never take his eyes from the baskets, and should land the combs by feel. He will soon get to land the tenderest comb without injury. When he has refilled the extractor, and by the crank has helped the reel to get under way, he can turn, and, taking four combs the first grab and three the next, almost fill a super in a second. The extra comb from the eight-frame extractor where seven extracting-combs are used in an eight-frame hive-body may be left to accumulate to seven. Using this system I have extracted 1200 lbs. an hour. If any one has better systematized the man's work at the extractor I should be very glad to hear from him.

MORE ABOUT THAT DR. MILLER PLAN OF PREVENTING SWARMING BY VENTILATION.

On page 404, July 1, Dr. Miller accuses the New Mexico Chap of having a faulty "noticer" and a "noter" that needs repairing. I do not think so, and I should be glad if others would help me out on this subject. I feel complimented that Dr. Miller took time and space to criticise me at all; but at the same time I do not feel flattered enough to abandon the point.

Now, his idea seems to be that the bees get too hot and proceed to swarm if they are not given ventilation enough. Can he answer the following question with a "got too hot" explanation? Why do our bees swarm most in the spring when the weather is cool and the honey-flow the same as it often is during a dearth in the summer? During the hot summer days we have not had a swarm in 60 days from over 1600 working colonies standing out in the boiling hot sun, where it is so hot that now and then the combs in one of the hives will melt down. We have the queen confined with a queen-excluder to half the space she had in the spring when we could not keep them from swarming whenever they got a hive nearly full of brood and honey. They will swarm now if they get filled up, but they will stand much more crowding than they would in the spring. We have not changed the entrances. Is this not pretty good proof that even excessive heat does not cause swarming, and that I am right in my idea that it is a question of scant room at a time of rapid brood-rearing? The question I raised is, "How does ventilation prevent swarming?" If the doctor tries to change from hot air to bad air I have him "cornered," for, no matter how foul the air becomes in a hive, the bees will never swarm out unless they are so strong in bees and brood that their instinct says they can risk a division.

Dr. Miller says that his bees fill their

combs clear down to the bottom-bars just as well with those two-inch entrances as they ever did with the $\frac{3}{4}$ entrances. Perhaps they do; but do queens lay as many eggs in all? It seems to me they would be inclined to lay down there, since the bees cluster down there. The question is, "Can the bees take care of as much brood, especially here, where the range of temperature is so great between day and night?" If they can not, they will see to it that the queen does not lay so much; and if she does not lay as well with a large entrance the result will be fewer bees. This seemed to be the case where I gave colonies excessive ventilation. The strongest colony in our home yard to-day is working in three extracting-supers through a $\frac{3}{8} \times 3$ -inch entrance without any ventilation above.

I believe that bees can keep their hives right for brood-rearing and wax-working better with a small entrance than with an entrance as large as $\frac{3}{4}$. I am watching very closely, and I have never seen any evidence that any colony of bees needs more than a $\frac{3}{4}$ entrance clear across the front of the hive at any time. I thought at one time that a big entrance stopped loafing; but later I noticed that at least a great many of the loafers loafed just inside. Somebody help me. I can't battle alone with Dr. Miller. I am awfully afraid he will get the best of me, and I am hollering for help.

Mesilla Park, N. M.

IS THERE A NEW BEE DISEASE?

A Puzzling Set of Symptoms Resembling Both Paralysis and Dysentery.

BY E. F. ROBINSON.

On page 377, June 15, I notice Catharine Beattie, describing the peculiar condition of her bees, asks if it is bee paralysis. I have seen four cases of bee disease just like this, and am sure it is either a constitutional weakness or an intestinal disease inherited from the queen, and have proved most conclusively that it can and must be cured by requeening. The sulphur treatment is entirely wrong, without even a theory to support it. As the bees do not eat it, its action must be by the fumes formed by the heat of the bees in the hive. Sulphurous fumes act principally on fungoid growth on minute animal life, neither of which is supposed to be present in bee paralysis, as paralysis is understood to be an affection of the nervous system.

Two of the cases under my notice were with bee-keeping friends in Victoria. Not knowing any better remedy I advised trying the sulphur treatment, but both colonies dwindled away and died right out during the winter. My third case was among my own bees in Victoria. The queen was purchased in the summer of either 1895 or '96—rather late in the season, I think. The colony wintered well; but in the spring the

trouble developed just as described by Miss Beattie. The bees would crawl out of the hive, and be dragged out by the healthy bees in a listless, sluggish manner, bodies all swollen up as in dysentery, the wings half extended. The bees would lie on the ground close about the hive. If I attempted to pick one up it would make a feeble movement with its wings, but show no desire to move its body. On opening the hive I found the rabbets under the ends of top-bars full of these swollen, lethargic bees, without strength or desire to move. I found on pressing the bodies that a nasty, foul-smelling, yellow mass would be expelled, but not by the natural outlet, always by a rupture on the bee's right side.

The question is, "Why should this peculiar condition prevail?" Does it not show that the intestines were blocked by constipation? Again, we may ask if the bees were not eating pollen (but there was no reason to, as there was plenty of honey in the hive, and dandelion and fruit bloom in plenty). What produces this *viscid* mass of yellow substance? Surely not honey—perhaps some disease of the intestines. It could not be what they had gathered, as other colonies were quite healthy. I sent some of these diseased bees to The A. I. Root Co. for explanation, as they were from a queen of their raising, and not twelve months old. The suggestion of poison from tree-spraying was offered; but that theory did not hold, as other bees were not affected, and it continued to get worse with the mature bees, but the brood was quite healthy and lasted long—after fruit had all set, well into July.

I tried the sulphur, and fed a syrup with formic acid added, but all to no use. As the queen was very prolific, and the bees handsomely marked, I hesitated to break up the colony. But I smothered the lot, burnt combs of brood, and painted the inside of the hive and bottom-board with strong carbolic acid. Twenty-eight miles from Victoria I have my outyard. There is little or no fruit grown there, and I am positive no spraying is practiced, as I have failed to see any fruit-tree pests around.

In the spring of 1909 an Italian colony showed the trouble just as described above—the only one out of thirty colonies. I tried the pressing of the bees' abdomens as before, with the same results—bursting from the right side. I had colonies each side of the affected one, six feet apart, but all remained healthy. As I was receiving some imported queens in June I killed the queens in the affected colony and introduced one of my new stock, left the bees, brood, and honey in the affected colony just as it was (and it was very bad) to see what would become of it. It gradually recovered. I never fed or bothered with the colony at all—just let it shift for itself as an experiment. As it had stored very little honey I fed it up for winter in September. It wintered well; and to-day, June 24, it had eight frames full of beautiful brood, besides six frames in a shallow extracting-super, equal to a total

of 12½ Langstroth frames, all healthy, and in splendid condition.

I would advise Miss Beattie to requenee her affected colonies, and earnestly ask that her letter and your humble servant's reply be sent to Dr. E. F. Phillips, as my observations may suggest the line of investigation. Requeening is the cure, but it is well to know the cause of the trouble.

Have you any record of alfalfa failing to set seed because of the scarcity of bees to bring about the needed fructification? I have a case reported from a hot irrigated district.

Victoria, B. C.

[Dr. Phillips' opinion on this question would be appreciated by our readers. Can a queen bring trouble of this kind?

In reply to your last paragraph, we do not recall any such record or report.—ED.]

SHAKING BEES.

The Experience of One who has Actually "Shook 'em."

BY WALTER S. POWDER.

I have just read the article by Geo. W. Williams, page 449, July 15, in which he wishes to hear from those who have had experience rather than further theories. I am shaking as if I had palsy to reply to that article. Some fifteen years ago shaking bees was one of my hobbies, and I wrote it up at that time for the *Indiana Farmer* under the caption of "Swarming Without Increase." I did a lot of experimenting to learn the limitations, and I watched many others take it up, some with success and many with failures. If Mr. Williams will keep on shaking his bees during a poor honey season, or at any time when honey is scarce, he will soon shake his bees all away. On the other hand, shaking, swarming, and producing comb honey fits in most beautifully if a certain course is pursued. Who has not been seriously annoyed by having a swarm issue when a super was just about half or more filled? We hive the new swarm; but by the time the two hives have gained strength to work again in supers, the flow is a thing of the past. In such cases I learned to shake the bees from the parent colony with the new swarm, but I found certain conditions that meant failure or success, according to several very important details. The new swarm must be hived with starters only in brood-frames, using a queen-excluding honey-board and placing the comb-honey super on the hive. Every bee should then be brushed or shaken with the new swarm. This hive will now produce more surplus comb honey than any other hive supposed to be a normal hive in the same yard. Some will ask why. Well, the bees go right in the super, storing and building comb. They will build nice worker comb in the brood-frames, and fast enough

to accommodate the queen. There is no brood to be taken care of, and the entire force concentrate their energies on storing honey in super.

Mr. Williams infers that he gets as satisfactory results by placing one frame of brood in brood-chamber, or returning all the brood. With me, this or either would be ruinous and a total failure. If a comb is placed in the brood-chamber the bees will exert their energies there instead of in the super, and the honey-cells on the comb will be drawn to an abnormal length, ruining the adjoining combs. To return all the brood would be worse than folly, with me. Full sheets wired in the brood-chamber are not desirable, because they provide too much storage, and our object is to get honey stored in the super. Those who have reported failures to me have invariably committed one of the errors about conditions in the brood-chamber. Inch starters in brood-frames is the correct method, and any deviation will bring unfavorable results.

Now some one will ask about the combs of brood which we have to take care of. They can be distributed to weaker colonies; but if you are a good bee-keeper you are not likely to have weak colonies during the swarming season, because you are supposed to have equalized the strength before the season opened. If one has an extractor, perhaps the most profitable method would be to place the brood in a third story on a hive with a queen-excluder on the lower brood-chamber. As fast as brood hatches, the cells will be used for honey; and in a few days all larvæ are sealed over, so that in extracting there is no throwing-out of larvæ.

In this we have natural swarming without increase; but if one desired increase the plans could be deviated accordingly. For instance, queen-cells could be saved, and enough bees left on the brood to protect it.

Indianapolis, Ind.

SUB-EARTH VENTILATION FOR BEE-CELLARS.

The Pipe Line Should be Water-tight.

BY S. T. PETTIT.

In the 80's, or about a quarter of a century ago, a good deal was said about sub-earth ventilators. The thing looked so reasonable, that, without due consideration, I spent some money on it, and put down one that I thought was right up to date, and so it was. But it proved to be only an edifying failure. It was simply a six-inch tile-drain, varying in depth from three to six feet. It entered the cellar about two feet above the bottom. From the cellar it extended northwest. This was in its favor, for the coldest winds are generally from that direction, which increased the flow of air through it into the cellar when most needed.

It proved a decided help in maintaining an even temperature in the cellar; but it filled the cellar with air saturated with

moisture. Drops of water were trickling down the stone walls, even the timbers above were wet, and drops of water were hanging from them. In a short time the ends of the timbers against the walls rotted so one could pick them to pieces with the fingers. The bees were damp, and many of the combs moldy.

Another objection to tile is that, in windy weather, earth air will find its way through the tile into the cellar instead of pure air through the tube. Of course, in time I closed up the entrance to the cellar, and gave ventilation through dark passages placed in the windows.

I have not tried it, but am confident that an iron pipe, not less than 6 inches in diameter, will prove a useful ventilator. It must be water-tight; then, as moisture will not go through iron, the air in going through the tube will be warmed and delivered into the cellar dry and in condition to take up moisture and give out heat. Then as the air flows in at one place and out at another the cellar is kept sweet, dry, and at a fairly even temperature. Glazed tile has been suggested instead of iron; but it is a poor conductor of heat.

Lay of the land permitting, the ventilator should extend from the cellar in a westerly to northwesterly direction. It should be well below the frost-line, and, I think, about 100 feet long. Air being influenced by temperature and winds is very fickle; so I believe that, for best results, the pipe should be about level from end to end. If necessary, an elbow can be used to bring the end of pipe above ground. The sub-earth ventilator does not occupy the place in bee-cellars that its evident usefulness claims for it.

Besides drying and warming in cold winter weather, it can be used to cool, comfort, and quiet the bees in warm spells in winter. For this purpose a cowl can be used at the outer end of the pipe to force air through it into the cellar. Another thing, its passage through the tube will raise its temperature, which may have pollen too near the freezing-point, and so make the ventilator more useful when the next cold snap comes along.

It occurs to me that, during warm spells in winter, there may be condensation in the sub-earth ventilator. To get rid of the water, one end of the tube must be lower than the other. If, owing to the lay of the land, it is necessary to have an elbow at the outer end, then the end entering the cellar must be lower than the other. A vessel of some kind can be placed to catch what may come in. No water should stand in the ventilator.

Aylmer (W.), Ont., Can., June 30.

[Our experience with wintering hives in the bee-cellar under the machine-shop convinces us that, when the bees get restless, pure air will quiet them when nothing else will. When the outside air is warm it is an easy matter to ventilate with windows; but

very often], the foulest air exists when it is very cold outside, and here is where the sub-earth ventilator would be a help. Is it not possible that most of the failures of sub-earth ventilators were due to the influx of wet air?—ED.]

COMB HONEY PRODUCED WITHOUT SEPARATORS.

BY NELSON M. GOOD.

I have tried to profit by every man's experience; and after giving separators a fair and impartial trial I have completely discarded them, using only one on each side of the super. I set my hives level, and weight them with stones so that a strong wind will not shake them, and use a starter in the sections that reaches about two-thirds of the way down. This starter hangs *straight* in the center. I am careful to fasten the starter so it will not fall down nor hang crooked. This is the secret and assurance of a nice super of honey with straight even comb. Of course, there are exceptions to nearly all rules; but I have a larger per cent of straight marketable honey in this way than I can possibly get by using separators of any kind; and my honey is good standard weight—a little more than is required, and yet this extra weight, I consider, does not cost me any thing, for my bees work faster, I believe, without the separators.

My neighbor has nearly 300 stands of bees, and he looked my honey over at the end of the season and said that I had more perfect comb honey on an average, without the separators, than he had with them. Yet it was no new thing with me. I have proved it over and over until I am well satisfied as to results. I will add that I took first and second prizes year before last at four different fairs, viz., Grand Junction, Glenwood Springs, Aspen, and Grand Valley, Colorado.

Many times bees fasten their comb to separators, and thus make a break in the comb, when, if the separator was not there, the comb would be straight and sealed.

Grand Valley, Colo., July 20.

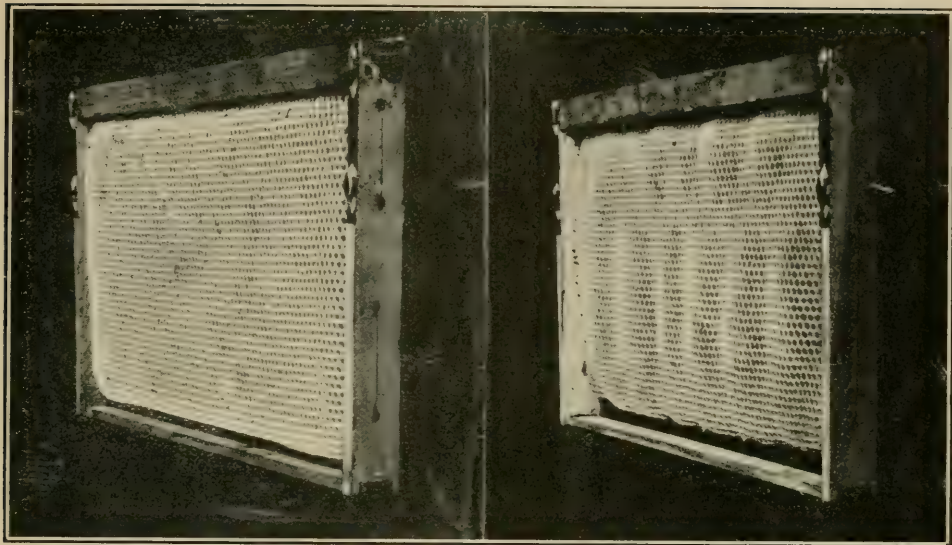
[Some bee-keepers are able to produce fine comb honey without separators; but in most cases, either owing to hives not being properly leveled, or to some other cause, the sections are found to be filled very unevenly. That bees work better when no separators are used, can not be doubted.—ED.]

Foundation 22 Years Old Accepted by the Bees.

My experience fully agrees with that of Dr. Miller as regards the comparative merits of old and new foundation. I am now using some foundation in sections that is over 20 years old, and bees do not seem to discriminate against it in the least. It is still in original packages, as it came from the manufacturer 22 years ago this summer. Part of it I used in Ohio, before coming south, and I am now using the remainder of it without any signs of deterioration.

SAMUEL RAY.

Hendersonville, N. C., May 16, 1910.



HORIZONTAL AND VERTICAL WIRING COMPARED.

Note that the comb at the left, built from horizontally wired foundation, is perfect except for the slight sagging. The comb at the right, built from foundation reinforced with seven vertical wires and two horizontal wires, is very irregular.

AN OBJECT-LESSON IN VERTICAL AND HORIZONTAL WIRING.

Some Surprises.

BY E. R. ROOT.

A short time ago, it will be remembered, we referred to the fact that horizontal wiring did not prevent the sag in foundation; that it had been found that the five or six rows of cells next to the top-bar would generally contain honey rather than brood, for the simple reason that cells were stretched too much for the queen to occupy. It is not practicable to wire on the vertical plan with thick top-bars. Various schemes showing up and down wires have been given in these columns, but none of them are really satisfactory. More than once the desirability of having vertical wires incorporated into foundation during the process of making has been expressed. So much was said that some two or three months ago we perfected a machine by which this could be done. We sent out a few test lots of foundation with vertical wires already incorporated in the wax. We also put quite a quantity of this product in our own home yard. This foundation with the wires already in was secured to the top-bar by the wedge-groove plan. One or more horizontal wires in addition served to hold the sheet along the center line of the frame. When the bees began to draw it out there was every promise that the plan was going to be a success. But further developments proved otherwise. For some unaccountable reason the comb from vertically wired foundation was wavy

as the subjoined illustration will show. In the engraving on the left will be seen an ordinary horizontally wired frame of foundation. On the right will be seen a fair sample of a vertically stayed comb with its hills and valleys. The vertical depressions are directly over the wire. Squint along the row of cells and you will see that the foundation in the horizontally wired frame has sagged a little. Nothing of this kind appears in the other. But there is an objectionable waviness, as before mentioned. This was, indeed, a great surprise. If this waviness were confined to only one of these vertically wired frames, or even to two or three of them, we should not think very much about it; but nearly every one of these combs having vertical supports shows this very objectionable defect.

Years ago, when we used vertical wiring exclusively, we saw no such trouble; but it should be remembered that we were then using a much heavier grade of foundation. The light brood foundation of 20 or 25 years ago had a very thick base, or midrib, as compared with the same grade of to-day. While it is true that we could remedy these vertical waves by using a heavier grade of foundation, we would lose one very important object that we sought to secure by the use of the vertical wires—namely, economy of wax. It would be far more practicable to use a heavier grade of foundation for horizontal wiring than with vertical.

Since our preliminary experiments with vertical wiring we have been working out another plan of horizontal wiring which we believe is going to solve the difficulty to a great extent if not entirely. The scheme is

simply this: String the wires closer together near the top-bar about an inch apart. The other wires, if they are needed, can be placed increasingly further apart as we approach the bottom-bar. The sag, or the major portion of it, with the old kind of horizontal wiring, occurred near the top-bar. It is this part of the foundation that should be reinforced more than it has been in the past. The bottom wire, if used at all, is only necessary to hold the foundation centrally in the frames; and then, besides, it serves the further purpose that, when the comb is turned over for examination, it will not fall out.

But quite another surprise awaited us. We found that, during the drawing of the foundation into comb, there will not be much sag; but the sag is quite apt to take place a year or two afterward. During hot weather, especially if it is very warm and the combs are filled heavy with honey, they will have a tendency to sag. This elongation of the cells takes place so gradually that the ordinary apiarist does not observe it; but if he will take a horizontally wired frame containing light brood foundation, and put it in a hive, he will find that the foundation will be drawn out with almost no appreciable sag. He is apt to draw the conclusion that horizontal wiring is good enough for him. But let him look at that comb two years afterward and he will probably find a very appreciable sag.

When we found that all vertically wired foundation was wavy we wrote to Dr. Miller and asked him if he found any waviness with his "splinted" foundation. He replied that he saw none; but if we remember correctly we saw some splinted combs that were wavy. Perhaps there was an illustration of it in these columns. We should be glad to get reports from those who have been "splinting" their foundation.

Later.—At the beginning of this article we stated that we were unable to account for the waviness in the vertically wired comb. A careful examination of the engraving on the right will show an interesting fact. Just notice that in addition to the vertical wires there are two horizontal wires, one about a third of the way down, and the other about $1\frac{1}{2}$ inches from the bottom-bar. Right along the line of those two wires you will see that there is no waviness; that is to say, the comb is as straight as a board directly over each wire. The same is true over the vertical wires. Now, the spaces between the vertical and horizontal wires are bulged. This suggests the fact that foundation in the process of drawing out expands *both vertically and laterally*. In the horizontally wired frame shown in the illustration on the left, where there are no vertical wires, there is an opportunity for downward expansion; and the four wires are, apparently, sufficient to prevent lateral expansion, and hence we have a perfect-looking flat comb except that we note a slight sagging. In this connection it is proper to observe that this horizontally wired comb was taken from the hive just as it

was drawn out, or, rather, shortly after. Experience shows that this comb will show more sag two years hence than now.

The conclusion of the whole matter is that, if foundation is wired both vertically and horizontally, we shall have a perfect comb without sag and without waviness. But this introduces the factor of extra expense; and it would, therefore, be cheaper to use horizontal wires and a heavier grade of foundation than to use the light brood with vertical and horizontal wiring. But from present indications it would appear that placing the wires near the top-bar and closer to each other, will still permit the use of light brood foundation.

We shall have some illustrations later on that will tell the story; and it will be a true story, for the photo does not lie.

BEES CARRYING EGGS TO REAR BROOD.

Is This Unusual?

BY W. T. BRAND.

During our recent drouth in the honey-flow I found it necessary to feed some of my bees. As I did not want to buy sugar and put it into the brood I decided to cage my queens until the flow started again. I caged them about July 5. July 15 I went through them to cut out the "forced" cells which I expected to find. I was very much surprised to find eggs and young brood as well as queen-cells. At first I was puzzled to know what was taking place. If there was another queen, why were those queen-cells there? I looked for another queen, but in vain. I shook them through a queen-excluder, but still no second queen. The old queen was still in the cage. I gave it up as a bad job, and left it and resumed my work. Before long I came to another case of the kind. This time I determined to solve the mystery. I soon found out what was wrong or happening. The queen was laying eggs on the wire netting of the cage and in the bottom of the cage, and the bees were reaching through the wire and getting the eggs, placing them in the cells, and taking care of them. I found about 15 out of 175 at the same trick. Is this unusual? I have had ten years' active experience among the bees, and this is the first time I have found any thing of the same nature.

LaSalle, Col.

[While we knew that bees would carry eggs from one part of the brood-nest to the other, we do not remember to have seen any reported instances like this where bees actually took eggs from the wire cloth of a caged queen and deposited them in cells and raised brood. Our correspondent seems to know what he is talking about, and we do not believe he is mistaken when he says that the bees actually moved the eggs. This is really an interesting fact in bee-lore, and if any one else has had any experience like it we should be glad to hear from him. —ED.]



THE A B C AND X Y Z PLAN OF TRANSFERRING FROM A BEE-TREE; THE BEES TRANSFER THEMSELVES.

TRANSFERRING FROM A BEE-TREE WITHOUT MUTILATING THE TREE.

BY GEO. W. BEARD.

In the fall of 1908 I cut a bee-tree—that is, I cut out the top containing the bees and lowered it to the ground with a rope. I then brought the log home and stood it up in the fork of a peach-tree.

In the spring of 1909 the colony proved to be in good shape; and, although I liked the novelty of having it in the log, I knew that, if they were in a good hive, they might reimburse me for skinning my shins in climbing that tree. But how was I to get them out of that log?

About this time I received a golden queen which I had ordered, and in introducing I put the old queen on two frames of brood and one of honey to hold in reserve in case the new queen was killed. The new queen was accepted, and as I am only an amateur I didn't like to kill the old queen. To be sure, I could put the brood back in the hive; but the queen?

A few days later, while reading in my

A B C and X Y Z (and, by the way, if an amateur hasn't that book he should get it at once) I found on page 48 these words: "How to get bees out of bee-trees," etc. Right there I found what to do with my old queen which was now doing well in the three-frame nucleus. I placed a barrel beside the log, and on the barrel I put a hive containing five frames of full-sheet foundation. The hole in the log was about three inches in diameter, so I sawed out a board six inches square and made a one-inch hole in the center and fastened a Porter bee-escape over the hole. Next I made a $3\frac{1}{2}$ -inch cloth ring by twisting a cloth and tying the ends together.

Placing the escape-board, cloth ring, nails, and hammer so they would be handy, I put the three-frame nucleus with the old queen in the hive on the barrel. Then, using the cloth ring as a washer, I nailed the escape-board over the hole in the log, being careful to place the escape so the bees could come out but could not get back in. This was done when the most bees were flying; and before I could get away the board and corner of the hive were covered

with bees that were coming in from the field, while those in the log were coming pell-mell through the escape, having been stirred up by driving the nails.

In two hours I had a good strong colony in the hive, and more coming out of the log. Now, to make a long story short, I left them just as they were for five weeks, at the end of which time I removed the escape from the board, leaving the board over the hole. I then sulphured the queen and remaining bees that were still in the log by blowing the sulphur fumes through the one-inch hole in the board. After giving them a good dose of sulphur I closed up the hole with a cork. In about 12 hours I removed the cork and waited one week more. The bees from the hive piled into that log, and brought out the honey, putting it in the hive.

Pittsfield, Ill.

BEE-KEEPING IN CALIFORNIA.

A Laurel Canyon Bee-keeper Who Sells His Whole Crop from a Small Store Close to the Apiary.

BY MRS. H. G. ACKLIN.

A trip to beautiful Hollywood, from this city, is interesting at any time; but at this season of the year it is perfectly delightful, especially after a refreshing rain, which we were fortunate enough to receive the day previous to this visit. Green fields are everywhere between the two cities—or, I should say, between Los Angeles and its attractive suburb, as “they two” are now one, Hollywood having been annexed to the larger city at a recent election.

Quite extensive fields of peas in bloom can be seen from the trolley car; but I do not know whether the blossom is honey-producing. Carnations and many other varieties of flowers are grown in many places

along the way. There are a few orange and lemon orchards, also olive-groves.

At the end of the car line, where the road starts up the canyon at a gentle slope, is an orange and lemon grove. Under the orange-trees the ground was as white as if snow had fallen; but on looking at the trees one missed no bloom, as they were literally one mass of white with green leaves peeping out between; and the fragrance of those blossoms is beyond compare. In trying to describe the delicious odor of an orange-grove in bloom, a friend said last spring, “It is like stepping out into Paradise.”

After an invigorating walk of about three-quarters of a mile along this canyon road, which, by the way, is a very good one, as automobiles are passing and repassing almost constantly, the apiary of Mr. David K. Smith comes into view. He has terraced the side hill just opposite the road and across a little ravine, and on those level steps he has placed his 175 colonies of bees.

Mr. Smith has a small honey-store on a level with and just beside the road, so an auto or any vehicle can be driven alongside, and the occupants procure honey without alighting. In fact, he disposes of his entire crop at very good prices, right from that little store; and last season he bought 38 ten-gallon cases more to supply his trade. If every bee-keeper could plan some way of disposing of his honey crop as successfully as has Mr. Smith, the honey commission men might go out of business.

Just over the little range of mountains from where this apiary is located is San Fernando Valley, a fertile farming country twenty-five by thirty miles in extent, or thereabout. About two miles to the west, and up grade all the way, is Lookout Mountain, from whose little flat top can be seen the whole country roundabout, including the grand old Pacific, towns intervening, and beach towns—Santa Catalina Island, and islands still further out. A party, including the writer, reached this little eminence one evening last fall just after the sun had disappeared, and the beauty of it all was beyond description.

The honey flora on these small mountains is limited. The bees were gathering pollen from the live oak, and possibly some from sycamore-trees. The manzanita does not flourish there. I obtained specimens of two kinds of sage and the horehound plant. The catnip plant has been tried, and yielded well for a time, but could not survive the long dry summers. The sages, white and



PARTIAL VIEW OF DAVID K. SMITH'S APIARY, NEAR LOS ANGELES, CALIFORNIA.



ANOTHER VIEW OF THE SMITH APIARY, SHOWING THE HONEY-HOUSE AND LARGE CORRUGATED TANK.

black, are making a luxuriant growth, the latter having commenced to blossom. The first surplus honey obtained in this canyon is from the black sage.

Laurel Canyon is situated so near the ocean that probably it never gets extremely dry, and a fair honey crop is doubtless obtained every year. Mr. Smith estimated his crop last year as averaging 60 lbs. per colony for both comb and extracted, which is not nearly as large as reported from some other sections of the State; but he has the added advantage of receiving larger returns for his product than if he were obliged to sell at wholesale; and, besides, he has no hauling or shipping.

Some of the rest of us here in California might get wise and locate apiaries in canyons near fashionable mountain trails and roads, and thereby receive double for the honey crop that is obtained under existing conditions; while at the same time we would be educating the public to eat honey. The honey from this canyon apiary is extracted and bottled in a small building near the little store, which building, I think, is the home of the apiarist most of the year.

There is a danger sign in plain view from the honey-store, warning any intruder who might otherwise care to brave the bees. I was nearly across the narrow ravine, bees and sign notwithstanding, when Mr. Smith met me, doubtless wondering what I meant. I soon explained that I was accustomed to bees, and could not resist having a talk with a bee-keeper, so he gave me a rustic chair under a live oak, and we "swapped lies" for about half an hour.

Speaking of lies, it does not seem possible that there could be any liars among California bee-keepers, especially in such locations



A HONEY-STORE WHERE THE TOTAL OUTPUT OF A LARGE APIARY IS DISPOSED OF.

The apiary, being close by, the cost of transportation may be neglected.



ONE OF THE OUT-APIARIES BELONGING TO I. T. SHUMARD, NEAR OSPREY, FLORIDA.

as the one I have been trying to describe. The natural scenery is so perfectly magnificent that all avarice and sin of every description should give place to lofty thoughts and high ideals.

Los Angeles, Cal.

ANOTHER GLIMPSE OF ISLAND BEE-KEEPING IN FLORIDA.

BY M. L. BREWER.

On page 435, July 15, 1909, I gave the readers of GLEANINGS some glimpses of Mr. I. T. Shumard's "Island Home" and some of his bee interests. Herewith is a view of one of the out-apiaries established that I then told of. This one, I believe, is down on South Creek, and belongs to Orville. Early in March of this year while visiting at Island Home we all boarded the launch and took a cruise to this apiary and found the bees booming; and while there several hives had to have top stories given them. At last reports I had, they were reaping a good harvest.

The location is on the creek bank near the water, for convenience for landing supplies and taking away the surplus, as all their other apiaries are so located. The view shows Mr. Shumard bending over a

hive, and Mr. McCauley near by with smoker to use in case of need. Quite a little of the saw palmetto shows also in the view, and this is their main supply crop. Bro. Shumard and family now have the mainland shore well stocked with bees for a distance of twelve to fifteen miles.

Philo, Ill., July 12.

SEPARATING HONEY FROM CAPPINGS.

The Advantage of Spreading Cappings Out in a Large Thin Layer.

BY E. M. GIBSON.

The July issue of the *Bee-keepers' Review* for 1909 has an article by Elmer Hutchinson in which he says that his loss of honey in cappings is \$50 for 20,000 lbs. of honey extracted. Whew! Thinking some of the readers of GLEANINGS may be doing likewise I will try to describe my method of disposing of the cappings. The illustration shows my uncapping-table. There are tin gutters, J, J, on the under side, which are cut in such shape as to convey the honey toward the center. Two boards, B, B, a foot wide and six feet long, are nailed into the frame shown, sloping from the outside toward the gutter, leaving a space of four

inches between the two, through which the honey falls and is conveyed by the gutters into a receptacle underneath. Two frames, C, H (one would be too unwieldy to handle to clean, etc.), covered with coarse screen wire not more than 7 to 8 wires to the inch, are made to fit into the frame and rest on crosspieces which are chamfered on the upper side to a thin edge to prevent the honey from accumulating, and nailed to the boards. When in place the frame and screen should be even on top. An upright piece is fastened to each end of the table, to which a 1x2 is fastened running the whole length of the table at a convenient height for scraping the cappings off the knives.

Two can uncap at the same time if necessary; but if only one is doing the uncapping the ends of the table can be used alternately; or if one cares to be near the extractor the cappings can be thrown over to the end not in use, and left to drain. During the dinner hour and at night the cappings are spread out over the table, and in the morning they are put into the solar extractor, and the honey drawn off every night. The drawing of the honey every night is important; for the longer it is left the darker it will get.

I have never exceeded two cases (240 lbs.) of solar honey from the cappings of much more than 20,000 lbs.; and as I sell all of my honey at one time I have never had to take less for the solar than for the best except once, and that was because I left it in the

solar extractor too long. The table takes up more room than a can or barrel; but at the rate of the above-mentioned loss, one year would pay for quite an addition if one had not room enough.

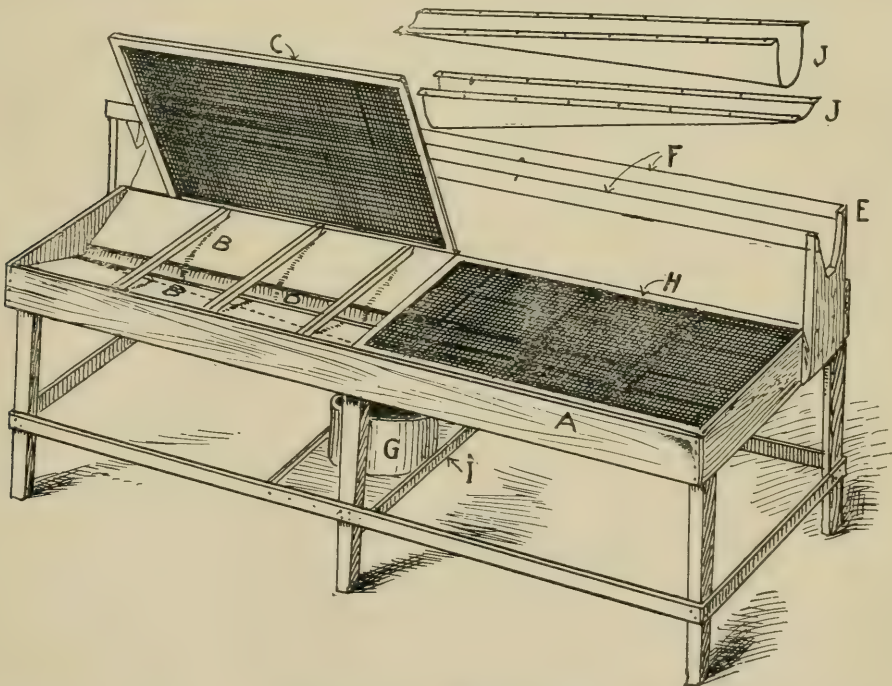
The material to build a table like the kind described costs but a trifle, and any one who can use a saw and hammer can build one. Some object to capping-melters on account of the heat, and I think the table just the thing to use in connection with them. One could do the uncapping at the table, and, after draining over night, the cappings could be run through the melter; and, there being so little left in them, the loss would be minimized.

WHAT REASON IS THERE FOR NOT USING EXCLUDERS?

I met a man a few days ago whom we call Texas Jones to designate him from other Joneses in the vicinity. He said, "Gibson, you ought to use queen-excluders. I used them on most of my hives this year for the first time, and I got a third more honey at least from those that had excluders than I did from those that had none; besides, the labor was lessened at least one-third, for I was continually putting the queen down, and in several instances have found her back in the super in less than an hour after."

"Do you think you get a third more honey by using excluders, Mr. Jones?"

"Yes, I am sure I got *more* than a third



GIBSON'S UNCAPPING-TABLE.

The cappings fall directly on to the large screen, where they are spread out in a thin layer to drain. A thick layer of cappings means that too much honey will be left.

more; but I want to be on the safe side. The queen will fill three or four frames with brood in the brood-nest, and then go into the super, and the bees will fill the brood-nest full of pollen and a little honey so that, if she should go down again, there would be no place for her to lay. She stays in the super, and the bees crowd her out with honey until she has only two or three patches of brood about the size of the palm of one's hand, and when fall comes there are bees enough for only a nucleus, and only a part of a crop of honey secured. Practically all the work is done in one hive-body—the super. I would go out of the business if I had to go back to old conditions."

"Do the same conditions exist in Texas, where you kept bees so long?"

"Exactly the same."

"Well, Mr. Jones, I have used excluders since 1901, and my experience coincides with yours exactly. I could not say I would go out of the business if I could not have them, but I would have them if they served for only one year and I had to buy new ones each year, for I know I could produce enough more honey to pay for them, besides saving a whole lot of hard and aggravating work. The reason I asked you if conditions were the same in Texas is that Mr. Louis H. Scholl, of New Braunfels, wrote an article for GLEANINGS not long ago in which he stated that queen-excluders were honey-excluders. This was very different from my experience, and I did not know but conditions were different there from those here. But, as you say, they are not, it is difficult to see how such differences of opinion can exist."

However, Mr. Scholl practically stands alone in the matter of queen-excluders by the older fraternity; but notwithstanding the minority are not *always* wrong, yet I think in this case, where practical demonstration by every one is so simple, there should be no room for cavil. Won't you please take it back, Mr. Scholl? You have written so many *good* things you must not lose your prestige on so small a matter as queen-excluders.

THE FOLLY OF BOOMING HONEY PROSPECTS.

I want to put in my protest against the booming of big honey *prospects*. I notice in the *American Bee Journal* for April that Mr. Kennedy, of Ventura, Cal., has commenced it; and I am wondering what he would say to-day, April 22, after a two-days' desert wind, with fair prospects of more. It reminds me of a man who had been out on a camping-trip, and stopped at my place and asked if I had any baling-wire. Of course I had, and I remarked that his wagon-wheel tires were all wired on. "Yes," said he, "them there tires was tight when I started out, but these 'er desert winds will shrink a six-mule-team government wagon down to a two-wheel cart in two days."

When I went to San Diego last fall to sell or contract for the sale of my honey my prospective buyer asked, "How much honey have you this year?"

I told him only one carload. "What's the matter?" said he; "every one says there is a big crop of honey this year."

I asked him if any one had told him that since the honey harvest, and he said no.

"Well," I said, "there is not more than half a crop."

He answered, "You are selling and I am buying. All reports are against you. I hear a man in your neighborhood has six hundred cases."

"I guess that is true," said I; "but he has 1400 colonies of bees, which, if he produced all of the 600 cases, would amount to about 51 pounds per colony—a little more than one-fourth of a crop."

Well, to make a long story short, I could not convince him that there was not a big crop of honey in this county, and I did not sell until a month later, when he found out the facts, and I got my price.

To those who are wondering what keeps the price of honey down while everything else is going skyward, I would say, stop booming the *prospects* of a big honey crop. Such a course on the part of honey-producers has a tendency to keep the honey-buyers from purchasing until the fruit-packers, tobaccoists, etc., have supplied their needs with sugar, cheap molasses, and glucose, after which honey has to go begging.

Jamul, Cal.

A NEW SYSTEM OF WAX-RENDERING.

Separating Wax from Old Combs, Without Pressure, by Rubbing the Refuse with Hot Water on a Screen.

BY WESLEY FOSTER.

The rendering of wax from old combs by the wax-press method is thorough if the press is made right and is strong enough; but it is a very slow way in comparison with the method we now use. Then the cost of a good press will run all the way from fifteen to twenty-five dollars, and there is much likelihood that it will not be strong enough. The burlap bag is continually bursting, and new ones have to be made every little while.

All our wax scrapings from frames and nice clean bits of combs we run in the solar extractor, and the solar refuse is run in the melter described in this article. The great advantages of this method are its speed, economy of effort, and the cheapness of the equipment. Fully twice the amount of wax can be run with this outfit in the time that was consumed when working with our press. The strength required is not as great as with the press; still, with our apparatus one needs to work vigorously. The cost for the whole thing, provided one does most of the work himself, will not be over two or three dollars.

THE FURNACE.

The furnace is built of brick or brickbats, about a foot high, and with the chimney at the same end where the door to the fire-box is located. A brick partition is run through

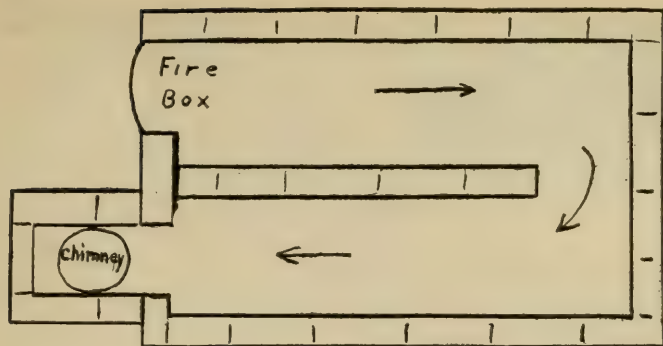


FIG. 1.—PLAN OF FOSTER'S WAX-RENDERING FURNACE.

the center of the furnace, or, rather, on one side of the furnace part, nearly to the opposite end, so that the draft will force the fire, smoke, and heat down one side of the vat on top, and back on the other side to the chimney as shown in Fig. 1.

THE MELTING-TANK.

This is shown in Fig. 2, and is made of two-inch stuff ten inches wide with a galvanized-iron bottom. The tank is $2\frac{1}{2}$ feet wide by $3\frac{1}{2}$ feet long. It is supported directly over the fire, and water boils in it very quickly. The board running across the tank near the center, but a little to one side, reaches nearly to the bottom of the tank, and keeps all the wax and comb in the larger division of the tank, only water being in the other part. This hot water is used to help wash out the wax when dipping the melted wax, comb, propolis, etc., from the tank into the vat shown in Fig. 3. We use lots of water, and find it essential to success by this method. The cover is made of heavy cloth stretched over a wooden frame that fits down over

the edges of the tank so little steam or heat can escape.

THE STRAINING-VAT.

This is shown in Fig. 3, and is about 7 inches deep by 2 feet wide and 3 feet long. It is the bottom of an old washing-machine fixed over for this purpose. The sieve or screen that the melted wax is strained and hoed and worked through is of very strong material, and is fitted to a heavy frame. When we get our melted slumgum

on this sieve we proceed with the hoe, trowel, and an abundance of hot water to separate the cocoons from the wax. It is chopped and hoed and worked with the trowel until the cocoons are all broken and torn apart, or as nearly so as it is possible. The wax, water, and propolis with a good deal of other refuse, get through into this vat; but as there is from ten to twenty times as much water as wax, much of this will settle and the wax run off at the outlet at the top of the vat, as shown in No. 3. The outlet at the bottom of the vat is to draw off the water from this vat when it gets too full.

Sometimes when we get a very dark lot of old combs we have to run the partially cleaned wax through a second time, but with an average lot and care we can get good cakes the first time.

Perhaps I should say that, in working the slumgum through the sieve, we grind it very hard with the trowel, and, of course, this makes a thick muddy sediment in the wa-

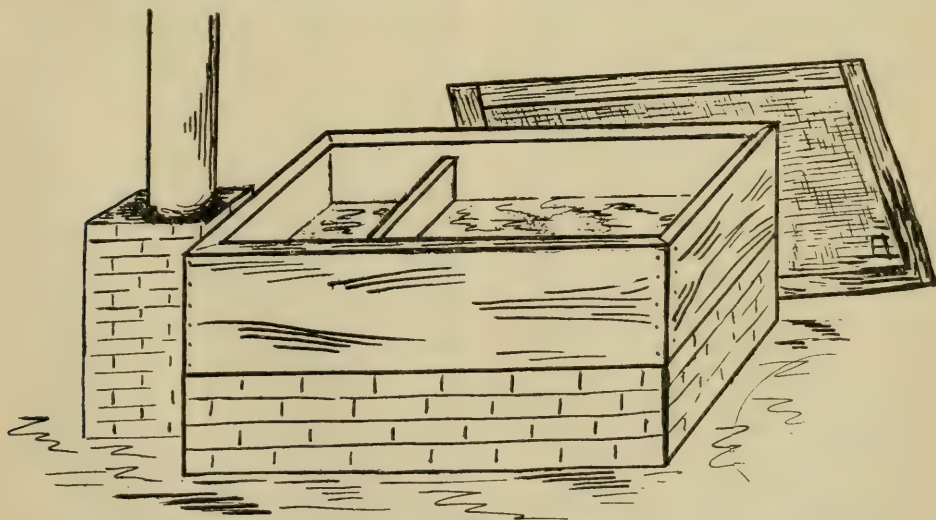


FIG. 2.—GENERAL VIEW OF FOSTER'S WAX-RENDERING FURNACE AND TANK.

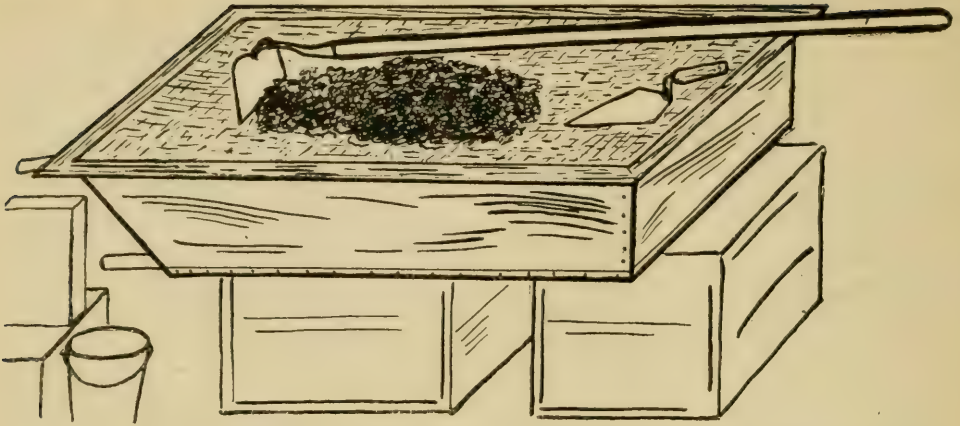


FIG. 3.—THE STRAINING-VAT WHERE THE REFUSE IS RUBBED AND HOED TO SEPARATE OUT THE WAX.

Plenty of hot water is dipped on to the refuse, and the rubbing and mixing continued until the wax is practically all out.

ter; but when the slumgum is ground this way the wax will rise and the propolis and dirt will be in the water and on the under side of the cakes of wax. There is one thing with this method that is detrimental; and that is, there is always some propolis in the wax; but this is just as true of any press-rendered wax I ever saw.

We have this whole wax-plant outdoors where there is no danger of fire, and we have plenty of room for work. We do this work on cloudy and cool days when there are no bees to bother.

THE COST OF THE MATERIAL.

If the brickwork is done by a bricklayer this will cost about \$3.00; but one can easily lay the wall up himself; and by using brickbats the cost for mortar and bats will not be over 75 cents. Where stone is plentiful it will do just as well as brick, and will not be affected by the fire so quickly. The two-inch plank, ten inches wide, for the sides of the melting-tank, cost \$1.00, cut to size at the planing-mill. The material used was pine. The galvanized-iron bottom for both tanks cost 50 cents. A good heavy quality of iron is best to make the tanks last a long time.

The wood for the small vat does not cost over 50 cents. We used an old washing-machine, so did not need to buy this; and we had the galvanized iron left. The heavy iron sieve cost 75 cents, or about 7 cents a square foot, the mesh running six to the inch, or about that. The wire used is somewhat smaller than baling wire, but is strong enough so there is no danger of mashing through by pressing down all one's weight.

Speaking of the economy of this wax-working apparatus reminds me of what an agricultural-college expert on poultry said—many people build a \$25.00 chicken-house for a dozen hens, and would pay 15 cents for a watering-jar when a tin can would do just as well.

Much of this applies to bee-keepers. We can utilize our old washing-machines, brickbats, etc., where it is hardly profitable to make a large outlay for a wax-working plant that is not used much of the year. If the brickbats are used, the appearance can be improved by covering over with a coat of mortar or cement plaster.

We have had so many narrow escapes from fire caused by wax boiling over that hereafter we will do all of this work outdoors. Boulder, Col.

[If plenty of hot water is dipped at intervals on to the refuse, and the whole mass repeatedly rubbed into the screen, we see no reason why thorough work could not be done.—ED.]

SELLING HONEY TO THE RETAIL TRADE.

Refusing to Accept a Low Price is the Secret of Success.

BY C. B. SNAVELY.

The retail market attracts the small honey-producers or the one who starts in a small way, and increases his stock as his finances, experiences, or demands for his product increase. This is naturally so because he has not always enough honey to warrant a shipment to the commission houses. The above explains our position, and we have succeeded so well that now with a stock large enough to sell to the grocer or ship to the commission men we still cater entirely to the retail trade.

There are numerous ways of obtaining the trade which uses honey habitually. Our methods have been entirely successful in our locality, and we can think of no reason why they would not be applicable to any locality. The honey-consumer is what the marketman calls "fancy" trade, and this

trade is usually hard to handle. We presume that most small producers are weak on the selling end of the game, and we can imagine that their idea would be to have some good man to whom they could take their honey and receive twenty cents or more a pound, or sit at home and write a few postals to real nice people who would promptly send Sambo with a check for the honey. It is not thus that success is won. During the last three years we have had considerable experience in selling honey to the family trade, and the only way we ever succeeded in obtaining a customer was to go right after him. The personal face-to-face interview captures the trade. From this form of selling, most small producers shrink; or, if they do try it, one or two rebuffs send them back to the postal cards. To sell any thing by the personal-contact plan you must know all about your goods, and use every effort to arm yourself with answers to all questions.

First, we insert a small well-worded advertisement in our local weekly paper, costing about 10 cents an insertion, laying particular stress upon the fact that our honey is of superior quality, being left on the hives until thoroughly ripened. The advertisements served their purpose, for they certainly did great work. Quite frequently, when called upon the people would say, "Yes, I'll take some; we saw your advertisement in the paper." It can be readily seen that the people had more confidence in us and our producer, and all on account of a small ten-cent advertisement. With a little advertising, face-to-face talk, the use of the circulars, "Good Value of Honey," by Dr. C. C. Miller, and only first-quality goods, a good trade can be worked up.

We presume that many GLEANINGS readers (through the advertising of *Farm Journal*, of Philadelphia, in a campaign to get subscriptions) are aware of the fact that two men on a New Jersey farm selling eggs made a profit last year of over \$12,000 from 1953 hens, or \$6.41 profit per hen. The secret of this big profit is not so much the method of production as the impressive fact that the two men (one of whom must be that rare type of producer who knows how to sell) sold their eggs as high as sixty cents a dozen—never less than forty cents, and at an average of fifty cents. We know the two New Jersey men would not make \$6.41 profit per hen selling to a grocer at Lititz; but we admire them for finding the sixty-cent market among the high liver of New York city.

The honey-producer should take these facts home, and post in plain sight. It is the price at which he sells his honey that makes his success great or small, or puts him out of business entirely. Any one who is intelligent enough to get twenty cents a pound or more for his comb honey is intelligent enough to keep bees properly. Ability to sell is nine-tenths of the business.

In conclusion we will say, bee-keepers, don't forget that no one is interested in your getting good prices for good honey but

yourself, and also remember that the only way to get good prices is to refuse to sell at low ones.

Lititz, Pa.

HEREDITARY INFLUENCES.

The Swarming Tendency Can Not Be Eliminated Any More than Lambs' Tails Can Be Shortened.

BY M. E. PRUITT.

Geo. W. Williams, referring to swarming, in GLEANINGS for May 15, page 321, says: "What a boon it would be if we could eliminate this troublesome tendency! But can we do it?" I should say, no, not any more than sheep-men can cause ewes to produce lambs with short tails. Haven't they chopped them off for generations and generations? Aren't they just as long as they always were?

I fully agree with Leo E. Gately, pages 322, 323, May 15, and I can't for the life of me see where the editor gets the "*external conditions*" from. Mr. Gately refers entirely to "*internal conditions*" when he says "*surrounding influences*," I think.

For the last several years we have kept down swarming by raising the major part of the brood and giving frames with starters in the place of it, so arranging the upper frames of brood that they do not come exactly over the lower ones. We do no "dumping on the grass," as Mr. Gately so comically puts it.

CHICKENS, AS A RULE, EAT DRONES ONLY.

Now, I don't see that it is so remarkable that a chicken eats drones and not workers. What is remarkable is the fact that they have sense enough to learn the difference. Nearly all our incubator chickens will go to the yard to get a meal. We used to feed drones daily to them when they were little tots. In their greediness to gobble every thing that fell they would occasionally grab a worker and get stung. That lesson was learned right there and then, that some of those juicy morsels had fire in them, and that some did not; and they soon learned to distinguish them by the sound of the hum. Little chicks can be easily trained. One lesson or two at the most is enough to teach them any thing that is within bounds.

WHEN TO DRIVE THE END-SPACING STAPLE.

Everybody seems to have trouble driving the staples in the frames; and it seems to me they must put them in after the frame is built. We put the staple in the end-bar first, and then build the frame. The saw-kerf block sent with the knock-down frames is placed on the end-bar, the open end of the saw-kerf being flush with the bottom of the notch made for the top-bar. We are careful always to have the V edge of the end-bar toward us, holding the same in the left hand with the top end of the top-bar pointing to the right hand. The shorter point of the staple is placed toward the right

hand, with the longer flush with the closed end of the saw-kerf. The staple is then driven (with a light hammer) until almost flush with the block. Others may use this method; but if they do they do not so express themselves in words or illustrations. See Mr. Scholl's illustration, page 372, June 15, for instance. Where the staple is put in first, one has something solid to hammer on, and the frame is not weakened, as is bound to be the case to a greater or less extent with the other method.

WHO PAYS THE COST OF HONEY-CANS?

As to "who pays the cost of the cans?" June 15, page 392, why, the consumer, of course, just as he does when buying coffee, lard, or any other product that is sold in cans. We either charge enough extra per pound for the honey to cover the cost of the vessel, or sell the full weight of honey and vessel, selling both at the same price per pound, or collect a similar vessel in the place of it and knock off a pound of the total weight. We get the price of the vessel or its equivalent in any case.

Eola, Texas.

BEE-STINGS AND RHEUMATISM.

What is Rheumatism? Are All of the Reported Cures Permanent?

BY DR. A. F. BONNEY.

As Editor Root says, "Dr. A. F. Bonney * * * has stood almost alone in his contentions that bee-stings will not cure rheumatism." Among bee-men, yes; but possibly not among doctors, although I have had a deal of trouble to get evidence against even my own side of the argument. For the edification of Mr. Root and others, who persistently write about different kinds of rheumatism, I wish to call their attention to the following definition:

"It (rheumatism) is to be separated as of distinct (possibly of bacterial) origin, from joint affections caused by gout, plumbism, scarlatina, gonorrhea, septicemia, tuberculosis, or syphilis."

The definition further says: "The word (rheumatism) is used with a certain and unfortunate freedom in application to joint pains of various origins and anatomical forms."

This definition is from the Century Dictionary, and alludes to muscular and gonorrheal rheumatism as other forms. The muscular type of pains are not rheumatism, but myalgia, "a morbid state of the muscles, characterized by pain and tenderness. Its pathology is obscure." Which means that we call it "rheumatism," but we do not know what it is. The other form, the gonorrheal, is called gonorrheal rheumatism because the swelling of the joints in those afflicted looks like the swelling caused by rheumatism.

Leaving out these two forms, if for no other reason than that the bee-sting treat-

ment is recommended for the inflammatory type alone, there remains but one type of disease known as rheumatism, according to the Century Dictionary and the medical lexicons, and that is articular rheumatism, variously rheumatic fever and inflammatory rheumatism. A continuation of the disease produces forms called chronic articular rheumatism and progressive chronic articular rheumatism; but as these are but a continuation of the original causation they can not be called any thing different.

A summary of the above will read: There is but one disease known to science which is called rheumatism, and that is what is variously called articular rheumatism and inflammatory rheumatism. Muscular rheumatism may be of the same origin. Gonorrheal rheumatism is of so rare an occurrence that I never saw a case and never expect to; and it is not rheumatism—at least as we are discussing it. Now we shall go a step further, and show you a case of the disease. Listen to a world-wide authority:

Acute articular rheumatism, an acute febrile disease, with pain and inflammation of the joints as prominent symptoms. * * * It often begins suddenly, a number of joints are usually attacked, one after the other; the fever is irregular; there is apt to be profuse sweating; endocarditis, pericarditis, pleuritis, sudamina, erythema nodosum, hyperpyrexia, and delirium, are more or less frequent features of the case. Its duration is from one to six weeks or more.

I doubt if any layman ever got opportunity to apply bee-stings, or any other treatment, to an *acute* case of rheumatism.

I now append a letter from the Doctors Wright, Coon & Hoenes, which really needs no comment. However, I might call attention to the fact that hundreds of persons are wearing iron rings which, they assert, relieve rheumatic pains; others carry potatoes and horsechestnuts with equally good results.

Dr. A. F. Bonney.—We received yours of the 9th, and read the clippings. Neither Dr. Hoenes nor myself has had any experience with the bee-sting cure. It does not look reasonable, and yet the only proof either for or against must be in actually testing it in a large number of cases. The advocates seem to have a little the best of the argument, because they claim favorable results from trial, while, so far as I have seen, the opponents do not point to any test they have made. I am not impressed with the statements of the advocates of bee-stings, because I have so often seen other "cures" recommended, and very highly praised by unscientific parties, when a careful test showed there was nothing to it. Talk by the average man or woman about so-called cures is likely to be very unreliable. The main comment that occurs to me is that it looks to me quite risky to allow the sting or any other part of an insect to penetrate the skin. There is no way of protecting from poisons in addition to the ordinary sting poison.

Denison, Iowa, July 13.

W. T. WRIGHT.

I have written to almost every case reported to have been cured which I could get track of. Mr. Landis claims still to be free from disease; but I could not get to hear from Dr. Buck (?), the man who advised him to try the remedy. Some do not reply; but a letter from Mrs. Mary Ruttembeck concludes: "May be you can tell me a good remedy that will benefit me; should be glad to know of any thing." I shall state briefly that the lady was not

cured, as Mr. Pryal's article, p. 19, Jan. 1, would lead one to think, though she may have been somewhat relieved.

When we stop to consider that there are literally millions of cases of rheumatism, real inflammatory rheumatism, in the world yearly, and only here and there a cure of (often an unknown disease) gout, lead-poisoning, or other joint trouble by bee-stings, I claim the evidence is insufficient.

Buck Grove, Ia.

THE DIFFICULTY OF GETTING RID OF FOUL BROOD.

Is it Not Probable that Mr. Stewart's Bees did Not have the Genuine American Foul Brood?

BY GEORGE M. STEELE.

On pages 417 and 445 Mr. Stewart tells his experience in reference to American foul brood. Now, I believe that his statements are incorrect concerning the care of this disease, for I am absolutely positive that he is mistaken in the disease he is treating, for it can not be the old genuine American foul brood. In and around Philadelphia we are having trouble with foul brood, and for five years I have been trying to clean it up.

I have shaken bees on strips of foundation, and in 35 days the disease appeared on the combs. I have also shaken on full sheets of foundation only to have the disease appear again. Only yesterday I was going through the bees belonging to a friend, and I found three hives out of five that had been shaken this spring, during the heavy honey-flow, that were as much diseased as they were before being shaken. Now, if any combs that have ever contained honey or brood in American foul-broody hives are used again they will surely carry the disease. Dr. Phillips has distinctly told all bee-keepers that he has subjected American foul brood to boiling water for a considerable time, and to the strongest antiseptics known to *materia medica*, and the spores of American foul brood seem to thrive under all the disinfectants known to man. Therefore I feel assured that Mr. Stewart will have to retract his statements, as there are no bees in the world that can clean out rosy brood having the bad odor of American foul brood. I can furnish infected combs from a colony that has been queenless and broodless for twenty days, and a microscopic examination will show that the bees attempted to close the cells with propolis.

The publication of these articles, I feel sure, will be the ruination of a large number of small bee-keepers throughout the diseased districts of the United States. I have a yard of something like sixty colonies in Chester County, forty miles from Philadelphia. I have control of all the bees within five miles of this yard—in fact, I have examined all the apiaries in Chester County, and I feel sure that the American foul brood has not arrived in this county. It seems more than likely that Mr. Stewart

must have either black brood, commonly called European foul brood, or pickled brood, or possibly even chilled or starved brood, which shows in any large apiary in early spring during the violent changes of weather that we usually have.

I think that the Alexander treatment is correct for the European foul brood; but I have found but one way of entirely getting rid of American foul brood, and at the same time save the bees and secure a crop.

If you are sure that you have *American* foul brood make a bottom-board bee-tight by nailing a strip across the front. Nail with staples an empty hive-body the same size as the hive to be treated, to this prepared bottom-board. Bore a $\frac{3}{8}$ -inch hole in front of this hive-body very close to the bottom-board. Over this hole tack a long funnel-shaped piece of tin with a small entrance just large enough to admit the passing of one bee, making sure that no bees can enter between the hive and the funnel. At the beginning of the honey-flow go to the diseased colony; set it aside, and put a new hive-body, containing full sheets of foundation with a queen-excluder, between it and the bottom-board. Pick up each comb separately from the diseased hive, and look for the queen. When found, place her in the new hive on the old stand and put the cover on. Pick up each comb carefully; put in the hive with the funnel entrance, as mentioned above. Then remove all debris, such as the hive-body, bottom-board, etc., that the bees have been shaken from, and carry it to the honey-house as quickly as possible. It would be well to let all adhering bees on the old hive-body and bottom-board get out through the escape in the honey-house. Be very careful to shake no dirt or cappings in front of the new hive.

This hive previously prepared with the funnel entrance which contains full brood-combs should be put in such a position that all the bees leaving it will come very close to the entrance of the new hive containing the queen. Wait 35 days, then carry the diseased mass of combs, without looking into the hive, to the honey-house. If it is desirable to save the honey in the combs they may be extracted if great care is used to prevent robbing, and if none of the honey from any of these combs is spilled on the clothing so that field bees can get to it. After extracting the honey the combs may be rendered into wax.

The plan as outlined above is the only one that I know of that will cure American foul brood. I hope that no one will take offense at what I have written, but I feel sure that I know what I am talking about. If Mr. Stewart will send me a piece of his American foul-brood comb, and also a comb that he has extracted the honey from, which previously had the disease, I shall be pleased to test it. I will place it in one of my clean colonies in Philadelphia, and watch developments.

30 South 40th St., Philadelphia, Pa.

Heads of Grain

from Different Fields

Honey from Acorns; Exorbitant Express Rates; Importance of Ordering Early.

Some years ago my brother (who is a bee-man) while working in his field near the edge of a strip of timber noticed some bees on a white-oak tree. On making close examination he found they were gathering something out of an indentation around a small teat on the lower end of the acorns, and in a few minutes that little cup would fill up again. The acorns that the bees were working on were very dark in color; but the green ones were passed by by the bees. Then about one or two years afterward he noticed this same oak-tree and found it was dead down within twelve or fifteen feet of the ground. The owner cut the tree down before it was entirely dead. Please inform us what it was the bees were getting, where it came from, and if the bees killed the tree.

Again, I wish to state a little experience I had this spring, not for my benefit now, but because it may benefit some one else and prevent him from getting into the same trouble I did. About the 21st of May I sent an order to Cincinnati for a peck of buckwheat, to be shipped by express to Newport, which is 8½ miles from my place. On the 27th I was notified that it was in the express office. I sent my oldest boy on horseback to get my buckwheat. The card I received from the express agent did not state what the charges were, so I handed my boy a dollar and told him to pay the express charges and bring back the change; but, lo and behold! on his return he informed me that there was no change for me. Well, I will not undertake to describe my feelings and tell all I said. If I had known that the express company was simply going to steal and rob in such a way I would have ordered one bushel to come by freight, and what I did not need to sow I could have fed to my poultry.

Now, Mr. Editor, is there any way by which the public can stop this wholesale stealing and robbing by these notorious express companies? You take this case, and, of course, it is a small matter; but just see—the article cost 40 cents, and then they charged me one dollar to haul 12 or 15 lbs. just from Cincinnati to Newport.

Newport, Tenn., July 16.

L. B. VINSON.

[We are unable to give you an opinion regarding honey from oak-trees; and as we have never seen any thing like it we do not know to whom we could apply for information.]

In ordering supplies from any distance, unless there is very great urgency it is better to order them by freight; and this illustrates the importance of ordering early. If the express companies were not so shortsighted as to charge such excessive rates they would secure very much more business than they now have. While the rates would be lower, of course, it is our opinion there would be greater profits in the aggregate from the increased volume of business. Under the present conditions there is not much we can do but grin and bear it. We hope that some day the Interstate-commerce law will have provisions regulating express rates. If Uncle Sam would put into operation a parcels-post system the express companies would immediately meet his rates, and even then they would make money by doing it.—ED.]

Washing Honey out of Cappings, and Feeding it Back to Comb-honey Colonies.

I am not using the capping-melter this year up to the present time, but may use it later on. I have a plan that I like very much for home yards where one can be on hand every day to attend to the necessary manipulations. I let the cappings drain two days and two nights, stirring them up once or twice during that time. I then wash them, using as little water as possible. This is done by placing the cappings in a butter-tub, well packed down, and pouring on some water. This water, after the cappings have soaked in it a short time, is sweet enough for feeding, and I feed it back at night to colonies working in comb-honey supers, using the

Alexander feeders. In this way I get all the honey out of the cappings, and what drains out is of better quality than it would be if run through the melter. In handling amber grades of honey, the melter would be all right; and for outyards I would use it at all times in order to keep cleaned up. This sweetened water could be used for making vinegar, of course; but not every bee-keeper has sale for vinegar; and if so, it is not all profit, as the barrels cost quite a sum. The reason I had not tried this plan before is because it had never occurred to me to feed back during the height of the honey-flow until I read Alexander's book.

To get off my subject a little, I shall have to acknowledge that comb-honey production does not pay me at present prices as compared with extracted honey. I have a great plenty of nice store combs, and my bees will put 40 lbs. of honey in a set of extracting-combs in about the same time it would require them to fill a 24-lb. super. I have only four colonies working in sections at present.

Bridgeport, Wis., July 6.

HARRY LATHROP.

Bees on Shares—who shall Pay for Extra Labor?

In running 500 colonies of bees on shares, what would be a fair agreement between the two parties when the person running the bees has to have a horse to ride around to the yards? Which party should own and feed the horse? In case where there is a lot of painting to be done, and covers and bottom-boards to be made, should the man running the bees make them, or should the owner of the bees have them made?

Hayneville, Ala., July 16.

A. B. BROWN.

[In keeping bees on shares it is the usual rule for one party to furnish all the labor, and the other to furnish all the supplies, except that each one of the parties pays for half the sections, shipping-cases, square cans, or barrels. At the end of the season both parties share equally in the honey and wax. As the painting of the hives—or, in fact, making new ones—would not in any way increase the honey crop, it would be fair for the owner to make this an extra, and allow extra time. Of course, if the other party will agree to do extra work, and if this could be shown to be necessary to produce a crop of honey, well and good; but as a matter of equity and justice, the one doing the work should, in our opinion, have additional compensation for painting the hives.]

As to the feed and care of the horse, the owner of the bees should pay for the feed and the rent of the horse; and the other party should do all the work, including the care of the horse. When there are 500 colonies it will be necessary to have a complete equipment, and that equipment would include a livery horse and wagon, an automobile, or a motor cycle and a livery.—ED.]

Does Black Color Irritate Bees, or is it the Rough Texture of the Clothing?

I just read the article by Mr. Baldensperger, page 409, and must beg to differ regarding the effect of color on bees with reference to flowers; for I have noticed that, when there are flowers of the same variety, of different colors, such as hyacinths, crocus, wall flowers, etc., the bees visit them without regard to color.

As to irritation, I think it is not so much the darkness as the roughness or hairiness. I believe that the instinct of bees leads them to attack any thing that resembles their natural enemies, such as bears, coons, etc. They do not fly at the black net of one's veil. A dog approaching a hive will be attacked at once; but a person in a smooth black coat will not. Do they sting negroes more than whites? I had an assistant once who wore a rough dark-blue coat, and in a few minutes it was completely speckled with stings. When he changed it there was no more trouble. I sometimes wear a smooth dark coat when working with the bees, and do not find that they notice it at all.

Metchosin, B. C., July 11.

W. FISHER.

Only Young Queens do the "Piping."

"Piping" is never done by the old queen. If I should hear this before the first or prime swarm issues I would conclude at once that the first swarm from that hive had either absconded or that the queen for some reason had died some two weeks previous; but if the swarm had left without being

noticed, with the old queen, of course, as she always comes out with the first swarm, unless, as before stated, she has died a short time before.

I have been a bee-keeper fifty years, and I know of no sure sign when to look for the first swarm; but I can tell positively when to expect any swarm after the first. In seven or eight days after the first has issued, I think not sooner than that, and it may be nine days, and then if a second or third or more are to issue you can always hear the young queens, usually two or three days or nights before they come out. The older they get before swarming, the louder they pipe. I have often heard them several feet away from the hive. When I had only a few swarms I was always listening for this signal of a second swarm. There are often two or three piping at once. Remember, it is only the young queens that pipe, and nearly a week after the first swarm.

Gaines, Pa., July 13.

A. DEWEY.

The Sound of the Queen Made Only Before the Issuing of the Second Swarm.

When I was a boy in Scotland my father kept bees in the old bee-skep. We always heard the queen give a sound of "yeep-yeep," only before the second swarm came out. I have kept bees in this country for twenty years, and have heard them, I don't know how often. As, a rule, if you listen the seventh and eighth night after the first swarm issues, and hear the sound, a second swarm will come off the next day. If a third comes off you can hear the same sound one or two days after the second.

Sebring, O., July 18.

W. F. BARCLAY.

How to Maintain a Drone-rearing Colony.

In maintaining a drone colony for late queen-rearing, is it necessary to take the queen away after she has filled the drone combs with eggs? Must they be kept queenless?

Batesville, Tex., July 10.

R. I. ERSKINE.

[In the case mentioned a queen would not lay in drone-cells unless the colony were fed or there was a light honey-flow on. After there are eggs in drone-cells the queen could be removed, and the bees would continue the work of rearing drone brood. A better way, however, and the one we use, is to keep feeding our drone-rearing colonies. These must be fed continuously; for to skip one day would mean the destruction of a lot of valuable drones.—ED.]

The Townsend Plan of Using Extracting-frames in Comb-honey Supers; the Advisability of Wiring Extracting-frames.

In the June 1st issue, page 348, there is an illustration of Jay Smith's use of the Townsend plan in Dandenbaker supers. Do you not think that the extracting-frames should be made with a vertical bar in the middle, so that a third super-spring would hold the fences in place? or would it be too much bother in extracting? Would you advise equipping all supers with these two extracting-frames, or only the first super to be put on each colony? Would it be advisable to wire the foundation into these frames?

Wellsville, N. Y., July 1.

C. N. FRANCISCO.

[We would not advise the use of a vertical wooden brace in the middle of the extracting frame as you describe. One objection to it is that it would consume too much valuable space right in the center of the brood-nest; and then we imagine it would interfere somewhat with the work of the uncapping-knife.

We would not advise equipping all supers with extracting-frames on the Townsend plan nor any other plan until you try a few to see whether you like them. Such supers are handy to have at the beginning of a honey-flow. After the bees get started to going above, it is not so necessary to have the extracting-frames.

We would wire all frames, whether shallow or full-depth, if you desire to use them for extracting.—ED.]

Italians More Immune to European Foul Brood.

My bees are diseased with European foul brood. Two years ago I was troubled with the same disease. I shook them and requeened them with Italian queens, but they proved to be wrongly mated. I have been advised to requeen them this year with Italian queens, without shaking. Do you think

this advisable? Do I run any or much risk in introducing queens without shaking? and if I do shake I am afraid my bees will not have gathered enough material to furnish them their food through the winter. Which do you consider the best strain of Italian bees? We thought of choosing between the golden and the long-tongued red-clover stock, but do not know which is the better.

Ithaca, N. Y., July 9. M. W. VAN DE BOGART.

[It would be advisable for you to requeen if your stock is hybrid or black. Experience shows, unquestionably, that pure Italians will resist European foul brood much better than hybrids or common blacks. There is no need of shaking again if the colonies are cured; but if the disease has reappeared we would advise shaking and Italianizing. This would be a good time of the year to do it; and should there be a dearth of honey at the time of shaking we would advise stimulative feeding at night or toward night. The buckwheat flow which is to follow ought to put your colonies in good condition for winter.

As between the golden and long-tongued red-clover strain, we do not know that there is any difference in the power to resist disease. Ordinarily we would advise just standard leather-colored Italian stock.—ED.]

How Long after Planting Basswoods will they Begin to Yield Nectar in Quantities?

Kindly write us at once, giving prices, and state when we can get basswood-trees, and also advise us in regard to planting the same. How long before we could expect a flow, and how many trees would it take to furnish a surplus for 600 colonies?

Brooksville, Ky., July 14. WALLIN & CORLIS.

[It would take in the neighborhood of twenty-five years for a grove of basswoods to yield nectar in quantity large enough to take care of any considerable number of bees. We put out ten acres of basswoods nearly forty years ago, but this grove has never amounted to anything for the production of honey. Basswoods, in order to do well, should grow with other trees in a forest. Basswood-trees when used for shade in city streets yield considerable nectar. The reason for this is probably the fact that the soil is not used up too much. It would not pay you to put out the basswood grove, if our experience is any criterion; but in about ten years basswood shade-trees will begin to yield some nectar. Trees five years old will yield a few blossoms; but a hundred acres of them would not supply very much nectar to fifty or one hundred colonies, let alone six hundred.—ED.]

Why the Buckwheat does Not Yield Honey.

My bees (Carniolans) do not work at all upon my buckwheat. I have made four different sowings at intervals of two weeks, and the last sowing is now in full bloom, and my bees have not worked upon any of the sowings at all. A man living five miles distant, who keeps native black bees, tells me that one year he sowed buckwheat and his bees avoided it entirely.

Archey, Ark., July 11.

A. W. CALLAM.

[Buckwheat, while a heavy yielder of honey in some localities and in some seasons, furnishes no nectar in others. A good locality may furnish no honey from buckwheat one year, and considerable the following year. This is true of practically all the honey-plants of any importance.

Regarding buckwheat, there are a few localities where the conditions of soil are such that it never yields honey, or at most a very small quantity.—ED.]

Combs Infested with Moth-worms.

I have four or five frames of honey infested with moth, and my hives are weak. Would it be safe to feed? Can I destroy the moth by any means?

Summerland, B. C., July 9.

F. W. BENTLEY.

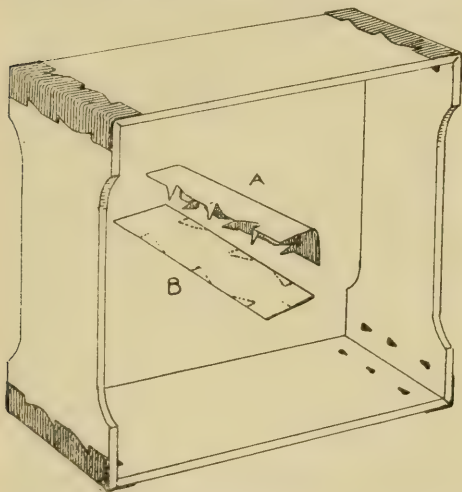
[If you have combs infested with moth-worms you can take a knife and cut out the galleries, including the ugly pests, and put the combs back in the hive. You can then feed, when the bees will repair the mutilated parts of the combs. You can not destroy the moth-worms when they are in a hive of live bees by the use of any drugs or process of fumigation. To avoid trouble in the first place, introduce Italian blood among your bees and you will find there will be no further difficulty.—ED.]

Metal-cornered Sections.

Large quantities of the one-piece sections never see service because they are broken in folding. Of course, if only one corner is broken the whole box is lost. If the wood is steamed or wet before being folded the loss is less; but at the same time the lock corner is likely to swell so that it goes together very tight. Then when the heat of the hive dries the wood this corner shrinks and pops apart, making the section of honey unsalable. If a super of nice honey can be loosened of propolis, and all the sections taken out without a ten-per-cent breakage, it is better than I have ever been able to do, although I have had many years of experience.

After the cleaning of propolis, hundreds more are broken. I do not know of anything so irritating as to get a section all clean but the last corner, and then have this corner break. Then when placing the sections in shipping-cases some of them are not entirely square, and in pressing them in they are squared up. If the corners hold the honey is cracked, hence the necessity of no-drip cleats, absorbent paper, etc., in the bottom of the cases.

At the clean-up of my last apiary of 120 hives I gathered up about two bushels of broken sections that had never been used on account of the breakage, and this was not anywhere near all of them.



The illustration shows clearly the metal reinforcement that I am using to prevent the breakage. Separate pieces of sections can be put together with these corners, and made just as substantial as an unbroken section. Of course, when the metal corner is on, the danger of breakage is avoided.

Sections so prepared will cost more, it is true; but they *should* cost more, for breakage is prevented, and the present weak section becomes a strong one. The bevels at the corners are drawn solidly together, and held there, regardless of how roughly a section may be handled when folded, when being put in or taken out of supers, or when being scraped of propolis. This means that more comb honey can be produced.

Minneapolis, Minn.

GEO. W. MAXWELL.

Ridding a Colony of Laying Workers by Removing it from its Stand.

There are many bee-keepers who are bothered with laying workers, and who have no good way of getting rid of them. During this season I have had a good deal of experience along this line, and have had a great deal of trouble in trying to make the bees accept a queen. If laying workers have just started it is no trick to introduce a queen at all; but after they have been in the hive for some time a queen will not be accepted. The only successful plan that I have read of is to divide the colony—that is, distribute the combs of bees around among other colonies; but this plan is not desirable when one wishes to increase his number of colonies. I have hit on a plan that has been a success in every

case where I have tried it. One of the colonies, which had eggs and drone brood in every cell in the former brood area, finally accepted a queen all right.

Remove the cover of the hive containing laying workers; take out half of the frames and then put on the cover again. Shake or brush the bees, from the combs removed, in front of the entrance of the hive, then put these beeless combs in another hive to use later. After all the shaken bees have gone into the hive, move the colony about 18 inches to one side, and on the old stand place the hive containing the combs removed, as mentioned before. All the fielders will leave the original laying-worker hive, and, returning, will enter the empty hive containing only the combs from which the bees were shaken.

About 24 hours after this moving is done, the colony will be ready to accept a queen, which should be introduced in the regular way. After the queen is laying, add a comb from the laying-worker hive every day with the few bees on it, or, preferably, the remaining bees in the original hive can be killed, and the rest of the combs given at once.

I am satisfied that this is the only way of getting rid of laying workers that have been in a hive for some time and saving the colony. Some may have no confidence in this method; but all I ask is a trial.

Elmendorf, Texas.

ALFRED L. HARTL.

No Foul Brood in Yakima County, Washington.

In the summer and fall of 1909 there was a report that foul brood existed in an apiary in the neighborhood of North Yakima. In the spring there were additional reports of the same character in the same neighborhood and in other sections. A sample of the so-called foul brood was exhibited at the April meeting of the Washington State Bee-keepers' Association. Some of the members pronounced it foul brood; others thought it was not, judging from the apicultural authorities; and in view of the fact that the assembled members could not definitely show that it was foul brood, the president of the association requested that two members submit samples from these hives to Dr. E. F. Phillips, at Washington, D. C. One member sent two samples, and the following report was made:

The two samples of brood, No. 1067, which you sent for examination, show no evidence of disease in either case. I certainly hope that European foul brood does not reach you.

E. F. PHILLIPS, in Charge of Apiculture.

The other sample sent showed a light case of pickled brood. This shows conclusively that foul brood does not exist in this part of the county and State.

At a meeting of the Washington State Bee-keepers' Association held in June, the secretary was instructed to send this report to the bee-journals of the country, in regard to the absence of foul brood, as the report that foul brood may have gained some headway, and it would prevent the growth of the industry in the State.

J. B. RAMAGE, Sec'y.

Meeting of Lebanon Bee-keepers' Association.

The Lebanon Bee-keepers' Association held their annual summer meeting Thursday, July 21, at the apiary of John S. Shope, Annville, Pa. W. S. Kilheffer spoke on the value of pure stock. Mr. Kilheffer is a very able speaker, well capable of holding the attention of his audience. E. S. Hacker spoke on "Fruit-growing and Bee-keeping." A very interesting feature of the meeting was a discussion of the various honey-plants—such as sweet clover, heartsease, smartweed, aster, etc. The association has seventy-five members enrolled, and in spite of the fact that the honey crop here is a short one, members are eagerly devising ways and means to get best results with the least labor expended in the future.

Lebanon, Pa.

E. L. BROWN, Sec.

A New Way of Selling Candied Honey.

In a grocery store at Webb City some fine extracted alfalfa honey candied on them, and they were unable to dispose of any of it as candied honey. Finally they cut the top off the can, put a glass plate over it, tied a big label, "Honey Butter," on the side, and sold it out readily at 15 cts. a pound.

Carthage, Mo., June 5.

B. C. AUTEN.

Our Homes

By A. I. Root

I am a jealous God, visiting the iniquity of the fathers upon the children unto the third and fourth generation of them that hate me.—Ex. 20:5.

In California and Florida, and many other places where the people have been in the habit of making footpaths through the woods and fields, it is often customary, when one buys a piece of property, to run a fence across the highways and thoroughfares—that is, where no street has been properly laid out. While Mrs. Root and I were in California several years ago we started home crosslots after dark by a well-known path. As it was late, and I was in a hurry, I was pushing ahead rather rapidly in the dark; but as I was familiar with the well-trodden path I did not expect any obstruction. It seems, however, that somebody had bought a piece of land, and run a fence right through, to start a chicken-ranch; and the frail poultry-netting was so invisible that I did not see or think of what had been put right across the pathway since I had been along in that direction. Before I knew it I had plunged into the netting with such force that it threw me back into the dirt like a ball. Of course, I was more astonished than hurt; but the bruises were sufficient to vex me as it was; and I was still more vexed to see Mrs. Root shaking with laughter. I think I asked her, somewhat impatiently, if she proposed to indulge in such merriment if I broke my bones or got killed. I think she declared she did not laugh until she saw me stand up and was apparently all right. Recently down in our Florida home I walked off our porch in the dark, and almost went down on my head on the hard cement pavement I had recently made. And she laughed at that. Now, do not imagine that I am putting up a *complaint* against Mrs. Root after all the good things I have said about her in years past. I simply wish to illustrate her fashion of laughing at accidents similar to these I have mentioned. If anybody is really hurt she is not only the readiest person in the world to help relieve suffering, but she knows what to do about as well as anybody I know of to ease the pains and trials of life.

Just one more illustration, and then I am ready for my moral.

I have several times mentioned our good neighbor, the Rev. Mr. Ten Broek. Now, neighbor T. is an old man like myself, but he is an Episcopal minister. Well, when he came over to our house one day last winter, slowly limping along, and announced that he had fallen off the roof of his house, Mrs. Root laughed again. It seems that the roof of his cottage needed some shingles; and as he was alone, the good man, even if he is seventy years old, thought he

could go up and fix it without troubling his neighbors. If it had not been for the growth of tropical grass, briars, etc. (such as I have described in telling about his Northey berry, on page 333, May 15), his fall might have been something more than a laughing-matter; but his comical look when he announced his mishap, together with the idea of a *preacher*, and an Episcopalian at that, rolling off the roof of the house into the briars, set Mrs. Root to laughing again and again. I think he protested a little, and inquired something as follows: "My good woman, why do you laugh? Suppose I had been killed—would you still laugh about it?"

"No, no, Mr. T. I would not laugh if you had been killed; but what I am laughing about is because you were *not* killed, and apparently not very much hurt; and we are all glad to see you able to come over and tell us about it after it is all over."

"But I am bruised and hurt, even if I was not killed."

And then we both busied ourselves in offering him courtplaster, cuticura, and every thing else. Let me now digress.

There is one among our grandchildren who has had, all his life, a fashion of laughing, sometimes uproariously, whenever any sort of accident happens. If there is any trouble with the automobile he laughs as if it were great fun, even though it stops progress on the journey; and although his parents have often reproved him for his fashion, or for his queer ability to see the ludicrous or ridiculous part of every occurrence, it does not seem to be of much use. The other night in coming home from church we had to make a long trip through a patch of woods after dark. I told Leland that, without the experience I had had in times past in following that path through the darkness, I should not be able to do it. So I took the lead. We came through all right and in sight of our home; but just as we were rejoicing almost at the very threshold of the door, we got out of the path and into a thick underbrush, and had quite a time in climbing over rotten logs and into the thicket until we gained our home. Leland got tangled up away out in the woods until I feared he would get beyond my hearing. He said I was wrong, and I said *he* was wrong; and it was really the blind leading the blind, and we were both "in the ditch," or at least almost hopelessly tangled in the brush and among the rotten logs of our wild wood around the cabin. Well, Leland laughed as usual. With his boyish strength to surmount obstacles it was more of a laughing-matter to him than to me. We finally reached the cabin door. Then it occurred to me that the key I had in my pocket would not work in the door before us. I had to get in by going round to the door on the other side. In order to get there I had to pass, in the darkness, the stump of one of my beautiful apricot-trees. After it had just begun to bear, all of a sudden it died; and in chopping it down and

getting it out of the way in a hurry I left a sharp stump sticking up. Right here is a moral. When you cut down a tree, especially around your home, cut it off level with the ground, so that nobody may be hurt by falling on it in the dark or at any other time. Well, I blundered over that stump, and skinned my shins so that they needed quite an application of courtplaster and cuticura, and then Leland laughed again as usual. Of course, no one knew I was hurt when he laughed; but the idea of his grandpa blundering over that stump after having tired himself out by climbing over logs and lumbering through brushes within a rod or two of his home, was sufficient to provoke his keen susceptibility to any thing ridiculous.

In our previous Home paper Satan suggested that my grandson need never know any thing about the thing in question and that it was really none of his business. Since the time of Adam, I suppose fathers have excused themselves for doing certain things they would not have their children do by the specious philosophy that the *children* would never know any thing about it, or *need* not know any thing about it. Sometimes we (or at least *some* of us) say that certain things which have transpired are known only to ourselves and to God. Is this true? Does any thing ever happen in the lives of any of us, especially those of us who have children and grandchildren, that *can* be concealed from anybody but God and the one who commits the sin or permits a sinful thought to enter his mind?

During the past year or more I have told you about my new discovery in poultry, etc. Well, I have just made a new discovery in regard to sin and Satan. I suppose we are not altogether responsible for our dreams, but I have discovered that we are, at least to *some* extent, even for the things we dream about. Dreams are a reflection of our waking hours; and we are certainly responsible, or at least largely so, for the things we *think* about. Now for my illustration or discovery. When I spoke to Mrs. Root about laughing at accidents I did not mean to censure her. It is a splendid thing to be able to look pleasant, and even smile when trouble comes. I am sure it is God's will and wish that we shall trust him enough to smile when unexpected obstacles block our way or even give us pain. We are told of some great and good men who could even indulge in harmless pleasantries when they were approaching death. This ability to take things in a cheerful way, and laugh at calamities, is a wonderful virtue if taken in the right spirit.* Well, I

do not know that any one of our five *children* shows this peculiarity that I have mentioned; but in the *next generation* it comes out, as we often see it illustrated with poultry and other domestic animals, when this peculiar trait comes to the surface again.

Sometimes in traveling in a place where I am sure I have never been before, things have a familiar look, and at times I can hardly make it seem possible that I have not at some time in my life been in that very place. Others have spoken and written in regard to this. I have sometimes wondered, when I was in a region where my father passed his early days, if it were not possible that I inherited, if that is the word to use, the memory of things that happened during *his* life. If this is true, and if indeed it is possible that children are impressed, not only with the things we do, but with the very *thoughts* we permit to take possession of our hearts, should we not be exceedingly careful? If a parent has fallen into the habit of giving way to his temper, is it not likely that his children and grandchildren will give way in a like manner? When somebody has a touch of insanity, how often people inquire, "Was his father or uncles or grandparents thus afflicted?" And very often it transpires that insanity or other things have been running in the family. There is a great mass of evidence showing that an intemperate man curses his children that come after him; and it is so great that I shudder to touch it. May God help us to consider, when we are tempted to give vent to any feeling, whether good or bad, to say to ourselves, as Bro. Reed said to me over forty years ago, "Mr. Root, do you want to see your boy grow up *exactly* such a man as you are?" Now, then, when you are again tempted to think no human eye sees what you are doing, or that none but God knows what you are *thinking*, consider that possibly generations yet unborn not only see but are likely to copy your very *thoughts* and *actions*.

THE SUNDAY SCHOOL TIMES.

Some years ago I told you that, if you could not afford to take more than one periodical, you should take the *Sunday School Times*; and I have been studying over this piece of advice for several years, and have *also* been "studying" the *Sunday School Times* since then. I think I added, when I

when she laughed again, and in a perfectly natural way, because I seemed so surprised and startled. It seems the nurse, while giving her her medicine, had managed to tell her a little story; and that story was about a man who absent-mindedly put a wooden toothpick back into his pocket after he had used it. His wife called him to order by saying suddenly, "Here, sir, what do you mean by putting that toothpick in your pocket after having used it?"

In his effort to make it appear that he really *did* know what he was doing he replied, "Why, my dear wife, I was just saving it up to give to some *poor fellow*."

This well-timed joke, purposely managed by the nurse, roused her up from her stupor, and she began to gain at once from that time forward.

* Mrs. Root's happy faculty of catching on to the ludicrous, even when on a bed of sickness, may have had at one time in her life a very beneficial effect on her health. She was very low with pleuropneumonia, and our excellent trained nurse thought it best to rouse her up a little at one particular crisis. When we were all tiptoeing about the house to avoid disturbing her, all at once I heard her well-known ringing laugh, although faint, of course, on account of her sickness. Fearing it was caused by delirium I cautiously went in.

made that remark, that, if you could take only *two* papers, you should subscribe for the *Rural New-Yorker* next. When I met the editor of the *Rural* in his office in New York some time afterward he laughingly alluded to it. He said he took our journal and showed it to his wife, and said the only thing he had to complain of was that I did not put the *Rural* first. But his wife said that A. I. Root had got it *exactly right* as it was—"Seek ye *first* the kingdom of God and his righteousness," etc. Well, a few months ago the *Sunday School Times* had an editorial about the importance of tackling first of all the job you have most dreaded. It said, in short, that the way to be happy is to pitch right into the most disagreeable task that lies before you, and finish it *first* and get it out of the way. I neglected to clip this out and use it for GLEANINGS, although I intended to do so; but after taking the above advice a good many times lately I felt so good over it that I am sorry I can not give you all of that sensible editorial. Now here is just one more that indicates the high character and good sense that seems to stand out strong and clear in every issue of that good old standby:

SELF-EXALTING SUICIDE.

Self-exaltation never exalts a man, but always lowers him. Not only do others think less of him when he tries to impress them with his greatness, but he himself is less of a man every time he attempts this. It is only part of the inexorable law that, if a man seeks his life, he shall lose it; but if he is willing to lose it he shall find it. When a neighbor learns of something that is highly creditable to us, but learns of it indirectly, without our having had any part in telling him, his opinion of us goes up. If we ourselves go and tell him of that same thing, in order to impress him with what we have done, although the thing itself remains unchanged, and is just as creditable as ever, nevertheless our telling of it is not creditable, and his opinion of us goes down. How slow we are to learn this! How we do hurt ourselves by trying to help ourselves! Many a good man who is really a great man is marring his goodness and turning his greatness into pettiness by going after this will-o'-the-wisp of reputation. The self-sought reputation is self-destroyed. When we die to self, and leave wholly to God the impression that our life may be creating in the minds of others, our reputations will steadily improve. "For God resisteth the proud, but giveth grace to the humble."

Since GLEANINGS was started it has been my privilege to make the acquaintance of many great and good men—men who are working for the kingdom of God and his righteousness, and not to lay up treasures in this world where rust and moth corrupt and where thieves break through and steal. Some of our old readers may remember A. F. Cowles, who has the Bible Truth Depot at 1002 Louisiana St., Williamsport, Pa. Dr. Cowles is preaching sermons by sending out spiritual tracts, and I wish every reader of GLEANINGS would send for the one he has just sent me, entitled "Captain Levi." As he prints these tracts free of charge and furnishes postage, without any help except that which God may move the hearts of the people to send him, it will not be at all

amiss if you send him a stamp or two to pay postage; and after you have read the little tract I mentioned, may be you will feel inclined to send him something more than stamps—at least I did.

My Dear Bro. Root:—It has been a long time since you have heard from me; but I thought that you would be glad to know of the increased service which is in our hands in these later years. The work has grown so that it reaches all over the world now. There are three of us employed in the office now regularly; but we have not room enough to do the work justice, and are looking to the Lord to put up a two-story building, and, if the Lord will, to put in a printing-outfit, for we have such difficulty in getting our printing done in the wordly offices. If you could see the letters that come in to us telling of blessing received through the printed ministry you would be glad that you have had the little fellowship in this service in sending us all these years GLEANINGS. We have enjoyed it much, and thank you much for it. There were many things that I should like to have sent you—rich spiritual truths—but I knew that your time is much taken up, so have refrained from doing it. Yet you will take the will for the dead in this. When I get a rich nugget of gold in spiritual truth I like to pass it on to others that they may be helped also.

Our letter-writing is over 300 a month, sometimes running over 350, and while the strain upon us is very great at my age, 77, the Lord keeps us in the most perfect health and strength. We do not get weary as in former years. This is the Lord's strength imparted to us. We trust to continue this service for a number of years, if the Lord tarry.

Praying his blessing upon you with all spiritual good that you may be filled with the knowledge of his will in all wisdom and understanding,

Gratefully yours in our Lord, A. F. COWLES.

Notes of Travel

By A. I. ROOT

FLORIDA IN THE SUMMER TIME.

To-day, July 26, I have been here just a week; and although the temperature has been most of the time between 80 and 90, we have had summer showers more or less every day, and cooling breezes from off the Gulf of Mexico almost all the time, day and night. Occasionally mornings the day starts out with a temperature along in the 70's, and one morning it was down to 72; but the nights are, as a rule, near 80. A few times about noon, before the clouds come up, we have it above 90; but 94 is the warmest I have seen it so far. I have never heard of a sunstroke in this region. For the first time in years I have put my fur cap and summer overcoat clear off out of sight, and I confess I greatly enjoy the lightest clothing, and going about in my shirt-sleeves, and much of the time bare-headed, outdoors as well as in the house. A sort of catarrh, grip, or hay fever, that has followed me for years, has apparently gone clear out of sight.

I have been told repeatedly that there is little or no gardening here in July and August, and this is to some extent true; but there are some things that grow beautifully during the much rain and high temperature. It is the *man* as well as the climate here, as well as everywhere else. For

instance, Mr. Rood has beautiful crops in all stages of growth, of beggarweed, velvet-beans, peanuts, and last, but not least, strawberries putting out rank thrifty runners and making as fine thrifty plants as I ever saw in the North. These plants are to be planted out soon, to bear his crop of berries, ripening about Christmas and later on. He pulled up a hill of peanuts that I should say had hanging to the roots nearly a couple of quarts (and they are good to eat green too, as I can testify). As I never saw beggarweed before, I was astonished to find it a very pretty bean that stands up without any pole, about as high as your head. It makes excellent hay, as does the velvet-bean.

Now very soon celery seed will be sown in the seed-beds, for the crop next year; in fact, some has been sown already, I am told. Sweet potatoes grow at any time, and *always*, and, what is more, you can leave them in the ground as long as you choose, and they will just stay there in good condition until wanted. One potato will often make several meals, and these great big fellows are fine eating too, I can tell you.

Neighbor Abbott planted quite a patch of pole lima beans some time last winter. Well, he has been picking and selling beans for months past, and the vines are now loaded with blossoms and little pods. Although planted about the usual distance apart, the vines have reached across from "pole to pole," until the whole garden is a tangled thicket. They are on a sort of swamp that he has drained off, so they withstood the drouth before the rainy season came on.

The peaches grown here are fine; and the mango, which I have just sampled for the first time in my life, is a most delicious fruit. Somebody once said they tasted like "turpentine and cotton batting," and there is a certain aromatic *resinous* flavor (which I very much like), and around the great seed or stone is something like cotton batting, and this latter makes it a sort of musky business to eat one. I don't know how that fellow would manage to eat one who "always mused his ears when he ate huckleberry pie." I generally take my mango out on the grass, near the wash-basin and napkin.

When I first got here California apples were 40 cts. a dozen; but next day the genial grocer informed me they had just received some nice Georgia apples at only 60 cts. a *peck*. They were small but fine. By the way, the *Cleveland Plain Dealer* has for some time been quoting early apples at 90 cts. to \$1.00 per *bushel*, and yet the eating-houses all along the way down here wanted "three for a dime." How much of this *dime* does the *producer* get? We don't use much meat here at this season; but when we can get beautiful salt-water fish, enough for two or more meals, for 20 or 25 cts., who *wants* any meat? Of course, chicken and eggs are always close by at our home, and we have nice Jersey milk every morning at 10 cts. per quart.

THE DISAGREEABLE THINGS ABOUT FLORIDA IN SUMMER.

I think I have heretofore spoken of the sandy roads in Florida; but during the rainy season there is very little trouble about the roads, and just now around Bradentown we have the very finest roads in the world, made of crushed stone, rolled hard and smooth, and then *oiled*, so there isn't a particle of dust or mud either. They are just perfect for the automobile. Well, I really don't know of any thing disagreeable just now but the *insect* pests, and they really are pretty tough on both people and chickens. There are almost *no* house-flies at all around *here*; but my brother's good wife may deserve some of the credit; and mosquitoes have been troublesome only a few mornings and evenings. This evening I sat and read on the porch quite a long time, and not a mosquito or gnat came near. The worst thing I know about Florida is the "red bugs." As a rule I believe they do not trouble old residents very much; but new comers, if they go out in the woods much, or through tall grass, weeds, or brush, are sure to get them. I never saw the "critters," and I am told they are almost invisible they are so small; but their bite affects most people much like the poison of certain plants, say poison ivy. Sal soda, ammonia, or kerosene will seem to neutralize the poison, and the smell of kerosene will, it is said, act as a repellant, as I have before mentioned. Put it around the tops of your shoes, as the ankles are the principal points of attack. Stick-tight fleas also pester people; but they do not poison or produce swelling like the red bugs and mosquitoes. They dig into the flesh, however, and must be got out with tweezers or with the point of a knife.

I believe all these pests are much worse in the dry-weather period. They breed in dry sand; and when the rainy season comes on they mostly disappear. I found none on myself all last winter, and so far none this summer; but they are very bad just now on the newly hatched chickens. Various salves are offered for sale; but my brother thinks any *grease* just as good, and he has had the best results from the fryings of fat pork. A very little on the head of the chick, where they may be seen, will induce them to "let go" soon. Here is something from a Medina Co. boy who has had many years of experience in Florida in regard to the matter.

PROSPECT RIDGE FARM

J. N. PARKER, PROP.

POULTRY, VEGETABLES
FRUIT : AND : HONEY

WEST PALM BEACH, Fla., July 23, 1910.

I see your brother has had trouble with chicken fleas. I want to tell you how to get rid of them. Get acetylene lime. It is what is left in making acetylene gas. Sow it liberally in and around your chicken-house, and in the nest-boxes; and pile up a bushel or two in the yard for them to wallow in, and I will guarantee you will not have any "jiggers," mites, or lice.

J. N. PARKER.

I notice friend Parker advertises "day-

old-chicks" at 15 cts. each, so there is at least one man in Florida in the day-old-chick business.

Health Notes

By A. I. ROOT

I hold in my hand two publications that have given me very much satisfaction. The first one is "Directions for Living and Sleeping in the Open Air." It is put out by the Metropolitan Life Insurance Company. This company, as I understand it, insures the lives of sick people; and after they have thus insured them it is a pecuniary object to have their patrons keep well, especially to live and not die, because when they die they have to hand over a lot of money. Well, I must confess this is the first time I have ever considered and clearly comprehended such a scheme for "making sick people well." The pamphlet is by Thomas Spees Carrington, M. D., and it is about the most sensible thing on the subject I ever got hold of. The author talks open air from beginning to end with a vengeance; and the pictures of arrangements that can be constructed or adapted to almost any dwelling at a low price are worth more alone than some books that cost \$1.00, say new systems of poultry-books for instance. I was especially attracted by a sort of woolen cap that covers the face, neck, and every thing but the mouth and eyes. If I were to sleep outdoors in freezing temperature it is just exactly what I should want. This great insurance company has at its command the very ablest talent in the line of medicine that the world can produce, and they have no nostrums to sell; in fact, the book is a vehement protest against attempting to cure tuberculosis and other kindred diseases by the use of drugs and medicines. Good food, pure water, and outdoor pure air first, last, and all the time. I do not know whether the book is sent free of charge or not. You can tell by addressing Metropolitan Life Insurance Company, New York. By the way, our good friend Dr. S. A. Knopf has assisted in preparing this pamphlet. May the Lord be praised for the progress that the whole wide world is making in stamping out the great white plague.

Now, the other book that has greatly pleased me is "Preventable Diseases," by Woods Hutchinson, M. D., who, like the pamphlet I have mentioned, advises open air for tuberculosis, typhoid fever, malaria, and every thing else. As Dr. Hutchinson is an allopathic physician he endorses the use of medicines, but to only a very limited extent. It seems the whole wide world as well as doctors of all and every school are beginning to believe prevention is better than cure, and they are fast getting into a line pretty nearly parallel to what T. B. Terry has been so vehemently teaching, if not altogether so. This beautiful book con-

tains over 400 pages, and it brings the matter of scientific and intelligent medicine clear up to the present date, touching on almost every thing that produces sickness, pain, and death, as well as the preventable diseases as colds, tuberculosis, diphtheria, malaria, headache, nervousness, and winding up with mental influences in disease. Price of the book is \$1.50. Address Houghton, Mifflin & Company, Boston, Mass.

ONLY TWO MEALS A DAY, ETC.

I inclose a clipping from the *Norwich Bulletin* of June 27. It says the no-breakfast fad started in Norwich 17 years ago. Such may be the case as to Norwich; but I began the no-breakfast habit ten years earlier, merely because of lack of appetite for that meal, and before I had ever heard or read of any one else doing so; but some years later I read Fowler's "Science of Life," in which he stated he had lived 15 years, I believe, on one meal a day. At one time I lived for about two years on one meal a day, but often ate a light lunch in the evening, and my weight kept at the usual place the same as when eating two or three meals a day. Now I and my family eat at about eight and five o'clock each day, and probably eat much more than is necessary.

The following is the clipping referred to:

"The omission of breakfast in the interest of health started in Norwich 17 years ago, and since then has become nearly world-wide. It is now in vogue in Japan, China, Australia, and New Zealand, and has been accepted by some eminent doctors in civilized lands. The following paragraph is clipped from a recent copy of the *Sydney, N. S. W., Stock Journal*, the editor of which recovered his health and has become 70 years young, instead of 70 years old, in consequence of this practice:

"A man who undertakes to eat only when he is hungry will soon find that two meals a day are ample. A fair lunch in the middle of the day, and a very light dinner at night, is plenty, or, better still, a tea. Then his household will be happy and healthy, and his own life will be free from disease. He will see the sun shining as it never shone before, and life will tingle through all his veins as it never did since his careless boyhood; and his women-folks will have time to look around and wonder at the glory of God's fair earth."

"The evidences are ample that this 'gospel of health' is a living gospel."

Packerville, Ct., July 7.

E. P. ROBINSON.

YELLOW SWEET CLOVER BLOSSOMING WITHIN 60 DAYS AFTER THE SEED WAS SOWN.

Noticing what is said on page 421 as to the early maturity of yellow sweet clover, I have a yet bigger story to tell. Last fall I bought some sweet-clover seed of you, both white and yellow, and about the first of May gave some of the seed (mixed) to my neighbor, Mr. Lillibridge, who sowed it in his garden. The yellow is now about two feet tall, and has been in blossom for the past two weeks. We can not be certain as to the date of sowing; but Mr. L. and I are quite positive the clover was in blossom within sixty days after sowing. I have traveled over quite a bit of Eastern Connecticut and Western Rhode Island, and have seen sweet clover growing in but one place, except as above mentioned, and that was near the railroad station at Montville, Ct. I have not succeeded well with sweet clover, but have done well with alfalfa. The white sweet clover sown by Mr. L. has not yet blossomed.

Packerville, Ct., July 6.

E. P. ROBINSON.

The above corroborates what we have said, that yellow sweet clover, as a rule, blossoms much sooner than the white.

SWEET CLOVER FOR HAY.

We clip the following from the *National Stockman and Farmer*, written by Mr. L. Roudebush, of Clermont Co., O.:

H. S. C., of Mt. Gilead, O., asks: "Will you kindly let me know what the feeding value of sweet clover is, and if there is any place in this country where it is sown for hay? If so, please let me know the num-

ber of crops that are cut per year and the average yield."

Sweet clover is a native of the elevated and arid regions of Western Asia. For years it has been thought to be of little value—a weed by most farmers. It has been used as a soil renovator, and to furnish bee pasture by a few until quite recently. In the northern part of the limestone belt in Kentucky, which borders on the Ohio River, it has been and is being grown quite extensively for pasture, seed, and hay. It seems to be peculiarly adapted to this section. Being a legume it delights in a limestone soil, and, apparently, the harder the better. For hay our experience is limited to one year. It is a pure biennial, and ordinarily can be cut only once. Ours was cut when the blossoms first appeared, though it may be cut very much sooner, and some years you might get a second crop. Our yield was at the rate of five tons per acre. We found it hard to cure properly, and harder to handle, as much of it was from 7 to 8 ft. in height. As to feeding value, I find no data. My horses ate it with great relish, and made splendid gains. It is laxative, but does not affect the kidneys as does clover or alfalfa. I would give it a value for feeding stock a little above red clover—I am still experimenting with it. One farmer in this county sowed 45 acres last March, and a friend in Central Kentucky 250. I think its greatest value is as a soil renovator, and, incidentally, for pasture for live stock and honey-bees.

Poultry Department

By A. I. Root

MORE ABOUT THE KELLERSTRASS WAY; THE OTHER SIDE OF THE QUESTION.

Mr. A. I. Root:—In regard to Mr. Kellerstrass and his winning only one first out of 24 entries it is only natural if what Mr. K. claims is true. He claims that his birds were layed on account of the snow blizzard, and so were not in show condition when they arrived at Madison Square Garden. From there he went to Baltimore, and, with his birds in the pink of condition, won every first prize offered. Now, we do not know what kind of stock Mr. K. has; in fact, we never had any dealings with him; but if his birds were not in condition, as he claims, he was not in the race. Condition means all in showing birds. We have known men to go to the show-room with really first-class birds, but have known others to go with birds inferior to the former in every respect, except condition, and win over the former; and still further, if Mr. Jones will take the trouble to look over the poultry journals he will see that Mr. K.'s customers are winning right along, which shows that there must be some breeding back of them.

In regard to Mr. K. copying his writings, we do not have his book; but it seems to us that there is really a little more "fuss" in all the poultry journals than seems necessary.

As stated before, we never have had any dealings with Mr. K., but gave you a few facts as we know them, so you can have a look at both sides. It is only fair, and we know you would have it so.

Yours for the chickens every time.

Lititz, Pa., July 29. SNAVELY THOS.

After having visited the Kellerstrass plant and inspected it, and met Mr. K. himself, I have credited him with deserving his success. Although I can not doubt your personal statement as to the "almanac," I still think your correspondent may be mistaken as to Mr. K.'s claims concerning winnings at Boston, etc. I recall seeing Kellerstrass' statement to the effect that "Kellerstrass White Orpington" had won certain places where I understood him to mean stock of his strain. People here advertise and talk of "K." stock in that way, and are understood. I have no interest in the matter except that of fair play. Hope your correspondent will look into the matter thoroughly and report.

Oklahoma City, Okla., July 22. G. I. GORDON.

Mr. A. I. Root:—In the June 15th issue of GLEANINGS I read with interest your papers including your comments on Kellerstrass' catalog. I agree

with your feelings of resentment of any business man charging a price for his catalog, be it much or little. I paid Kellerstrass for his book, and felt that he was simply a grafter for getting money in that way. I also bought some of his eggs at \$30.00 per 15, and got seven chickens out of the 15 eggs; 5 eggs were infertile, and 3 chicks perished at not over the fifth day of incubation.

The eggs were set under a splendid White Rock hen, and under conditions that were highly favorable in every way for a good hatch. I also sent to Wm. Cook & Sons, Scotch Plains, N. J., and got 25 of their best eggs and set them under another fine White Rock hen. Both are ideal hens for hatching as could be desired, and make the best of mothers. From Cook's 15 eggs I got 10 fair chicks; 3 eggs were infertile, one died early in the process of incubation, one egg was broken about the 15th day, and had a chicken well advanced in it. By comparison of the two lots of chickens I believe the Kellerstrass chickens are going to surpass the others in every way, although I am keeping them under exactly the same conditions, on free range, pure water, fresh-air homes, and plenty of wholesome food. I wrote Mr. Kellerstrass of the results of the hatch; he ignored my letter entirely. His literature intimates that he will make good, etc.; but Kellerstrass is in the business for what there is in it. He is an astute advertiser. In all his methods he shows adroitness. There are several things in connection with his literature that might throw him open to censure by discerning people; yet I believe that his stock is of superb quality and of splendid vigor. The seven chickens I have give every evidence of great vigor and vitality. As a foundation stock they will no doubt prove to be cheap, even at the price they cost me.

I wish you would write to Ernest Meiere, Secretary and Treasurer of the American Orpington Club, Flushing, L. I., and ask for the club's catalog; you will thereby, no doubt, see that Kellerstrass would not dare to claim in the way of winnings what the club and competitors knew he did not win, as they would expel him peremptorily, and also throw him out of the club. I have been trying for a long time to get foundation stock that was entirely free from hereditary disease, and I believe I have succeeded in the Kellerstrass stock.

Cleveland, Ohio, July 30.

WM. B. HESS.

Special Notices by A. I. Root

THE WYANDOTTES—ANOTHER POULTRY BOOK.

The poultry literature is getting to be something fearful. The poultry-books, to say nothing of the periodicals, would make quite a library of themselves. In my hand is a nice large poultry-book, beautifully gotten up, and it is all about the Wyandottes and nothing else. There are eight kinds of Wyandottes all together; and this book is devoted entirely to a discussion of these eight kinds. There is nothing said about poultry-houses, and not much about feeding poultry. It is all pictures of the birds and pictures of the feathers. By the way, there is one colored plate of the Partridge Wyandotte that is almost worth a dollar of itself to frame and hang up in a room. The price of the book is \$1.00. There are 160 pages, 9x12; The book is published by the Reliable Poultry Journal Publishing Co., Quincy, Ill., or Buffalo, N. Y.

"RED SHOES" AND "YELLOW NOSES."

Is any thing prettier, in the whole domain of nature, than a newly hatched chick? Yes, a newly hatched duck. Our good friend, Kent Jennings, of Mt. Gilead, O., was kind enough to send me 15 eggs of his choicest strain of Indian Runner ducks about a month ago; and to-day, July 18, ten very lively little ducks with the most comical and bewitching "red shoes" are delighting the babies, "Jean" and "Katharine," and some older ones. No bootblack ever got such a taking "shine" on any pair of shoes; and their bright and inquisitive eyes, with the comical yellow bills, are "too cute for any thing." They are already sampling rolled oats and milk with great gusto; and as I am just off for Florida, "grandma" must look after their rations for a while.

Gleanings in Bee Culture

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Editorial

Do not forget the National convention, to be held in Albany, Oct. 12 and 13.

THE MICHIGAN HONEY CROP AND THE WILLOW-HERB COUNTRY.

We have been making a hurried tour through the northern sections of Michigan, taking in the territory about 100 to 150 miles south of Mackinac. In this district more honey has been produced than in the central portion of the State that has suffered from drouth. We have taken something like 130 photos. These will be run through the year, showing bee-keeping in all its interesting phases in what is known as the willow-herb and raspberry districts.

THE ALEXANDER TREATMENT FOR EUROPEAN FOUL BROOD.

ATTENTION is called to the article by Mr. Earl Seamans, in this issue, on the subject of the Alexander cure for European foul brood. So far we have had several reports showing that the treatment is effective, and we have had other reports where it seemed to be an entire failure. Is it possible that these latter have been due to the failure to carry out Mr. Alexander's instructions to the letter? The treatment is a very simple one; and in the cases where the regular orthodox McEvoy treatment has failed to effect a cure, the Alexander plan can be tried to good advantage.

PERCOLATOR FEEDERS.

IN this issue our friend Samuel Simmins shows several forms of percolator feeders. If we are correct, this idea has not been exploited to any great extent in America, although percolators to make the syrup apart from the hive or feeder have been used to some extent. A percolator on the principle of the ones shown in this issue would be very handy for outyard work. All that would be necessary would be to carry sugar, and take the water from some nearby spring or well at the yard. Possibly the same kind of feeder could be used to advantage at the home yard, as it would eliminate all possible daub—that is, syrup drippings that might invite robbers. Most of the feeders sold by supply houses could be made over into percolator feeders.

THE LIGHT NON-REVERSIBLE EXTRACTORS; THEIR ADVANTAGES OVER THE LARGER AUTOMATIC MACHINES.

We have been testing here at Medina and in Northern Michigan a four-frame non-reversible Novice honey-extractor. In actual output it is clear ahead of a two-frame Cowan reversible, and, under some conditions, not far behind a four-frame automatic reversible at almost twice the cost. It has fewer complications, less than half the weight, only 20 inches in diameter as against 29 for the larger automatic machine of the same comb capacity. As the small machine is so much lighter it takes much less power to give sufficient centrifugal force to throw the honey out of the combs.

These little light non-reversible four-frame machines, while not as efficient as the four-frame automatics, are much handier for hauling to outyards, and much cheaper, especially when one has to have a machine at each yard. There are no movable parts except the revolving reel; and this, in the estimation of Mr. Townsend, is a very important feature.

LETTING BEES ROB OUT WET EXTRACTING-COMBS AT AN EXTRACTING-YARD.

Two or three times of late we have entered a caution against letting bees clean up exposed wet extracting-combs in the vicinity of a common highway or in a locality where neighboring dwellings are very close to each other. While we still think the caution is a wise one to put before beginners, we are convinced that, under some conditions, an expert can have his combs cleaned out in this way to advantage. When one has a proper extracting-outfit and a complete power-extracting equipment at his home yard, it is necessary for him to haul the combs from the outyard to the home yard. After extracting he has a load of supers with wet combs. He can do one of two things: haul these combs back to the extracting-yard, put them on the hives to be refilled again, if the flow is still on, or he may place them at the back end of his lot where the yard is located, and allow the home bees to help themselves indiscriminately. Of course, there will be an uproar of robbing for a while, and the bees may be cross, and that is where the danger lies. One can minimize this trouble somewhat by stacking wet supers up in piles, closing all ingress to the supers except at a contracted entrance at the bottom. Of course, in two or three days the combs will be cleaned up and dried, ready to lay aside for the fall

or winter. While the bees are cleaning up, one can work in the house, leaving it open if he likes, because robbing at that point will be eliminated.

Of course, if one has foul brood in the vicinity, such wholesale cleaning-out of combs is dangerous in the extreme, for practically every colony in the yard will have a hand in robbing out the combs; and should they contain any germs of disease, foul brood will be spread right and left.

A NEW PAPER ON BEE DISEASES.

DR. WALTER MALDEN, of the Pathological Laboratory of Cambridge University, Cambridge, England, has recently published an interesting article entitled "Diseases of Bees," in the *Journal of Economic Biology*, Vol. V., pt. 2, pp. 41-48. Dr. Malden's chief previous work in the interest of bee-keeping has been his investigation of the Isle of Wight disease, which has been known since 1904.

The paper is divided into two parts, the diseases of bees being discussed as those of the larvæ and those of adult bees. In his discussion of larvæ diseases it is interesting to know that he accepts and uses the names American foul brood and European foul brood, which are now in general use in this country, although they have not been accepted by most English writers. He also states that *Bacillus larvæ* of Dr. White is the cause of American foul brood, and calls attention to the fact that Dr. Maassen later named the same organism *Bacillus Brandenburgensis*. In the case of European foul brood he calls attention to the fact that Cheshire's experiments are not quite conclusive, and that the cause of the disease is not known, although *Bacillus alvei* is present.

Under adult diseases Dr. Malden discusses the two forms of dysentery as described by Dr. Zander, May sickness, paralysis, and Isle of Wight disease. Since these diseases are not well understood it could not be expected that this paper could clear up the present confusion entirely.

In the portion of brood diseases particularly, this paper is valuable, as it will help greatly in clearing up the confusion now existing among writers of different countries in the matter of the causes of disease. The clear analysis of work which has been done is much needed, and Dr. Malden's paper is very welcome.

THOSE FOREST FIRES AND BEE-HIVE LUMBER.

CAN'T something be done to stop these awful fires, says every one? There is plenty of legislation, both State and national; but somehow during every year, when a drouth is on, there are millions of property wasted, to say nothing of valuable lives lost.

While in Northern Michigan recently we investigated the cause of these disasters, and found that the majority of them were not due to the Indians and hunters, as we

had supposed, but to the railroads and to the farmers. The latter, finding they are unable to burn out a clearing on some of these waste lands (where the lumber companies cut out all the valuable material) except during a drouth, with the best of intentions they start a fire, and before they know it it gets away from them, carrying death and destruction in its wake.

We asked if something could not be done to stop such work, and why stringent laws were not passed so no man could be allowed to burn any thing even on his premises except under the supervision of the State authorities. "We already have such laws," said our informant; "but through the laxity of enforcement, or defects in the laws themselves, the forest fires go on just the same." The deplorable thing is that irreplaceable property is destroyed. Millions of feet of beautiful timber are ruined; and the straight shafts of burned trees stand out as mute evidence of barren wastes that were once worth millions.

The awful destruction that has taken place, and is still going on as we write these words, in Idaho, is only a sample of what the country has suffered for many years past. These things occur so often that we become hardened. In the mean time the price of lumber goes soaring after each fire; and, unluckily for us bee-keepers, bee-hive lumber is getting to be so scarce that it is hard to get it at any price.

No wonder the public is so tremendously interested in the conservation of our forests; and no wonder it is getting tired of Ballinger. While it would be unfair to saddle on him our forest fires, the public believes, whether justly or not, that somehow he has favored private interests at the expense of the people.

CROP REPORTS.

REPORTS from all sections of the country, except in certain areas, would seem to indicate that a severe drouth has been holding sway over a large part of the land. This, so far, has not done any permanent damage to the clovers. If we should get fall rains the clovers would be very much in evidence next year. Reports continue to show that some Western extracted honey will be secured, and that there is a good crop in some sections and a poor one in others. This is also true to a great extent in the large area east of the Mississippi. In some sections of the eastern part of the country there has been a bumper crop of clover honey, and in others a very light yield with all gradations between. There will probably be enough extracted honey, both clover and alfalfa, to take care of the market needs; but there seems to be a scarcity of comb honey.

THE TENDENCY TOWARD THE PRODUCTION OF EXTRACTED RATHER THAN COMB HONEY.

There is plenty of evidence going to show a tendency on the part of comb-honey producers to go into the business of raising ex-

tracted. The reason of this seems to be that there is not enough difference between the market prices on comb and extracted to warrant a continuation of the production of comb, which really costs more to produce than the market quotations would seem to show.

This is something of an indication that the public is beginning to have confidence in extracted honey. The practical workings of the pure-food laws, both State and national, have restored confidence in the product. It is becoming noticeable that extracted has a tendency to rise, while comb has remained almost stationary for many years. This fact has given considerable encouragement to the production of extracted honey. When we consider also that swarming is an unsolved problem in the production of comb honey, and an easy one in the production of extracted, and that the hive and super equipment is much simpler too, it is not at all surprising that there should be a marked tendency toward the relatively cheaper article that apparently yields a larger return for the investment.

THE McEVoy OR THE FOUNDATION METHOD
OF TREATMENT FOR BROOD DISEASES;
"NOT A GREASE SPOT LEFT."

REFERRING to our editorial on p. 509 Mr. Wm. McEvoy, author of the McEvoy treatment, writes:

Friend Root:—The foul-brood treatments are in hot dispute these days, and it is amusing to see how you went for mine in your editorial, Aug. 15. Scarcely a grease spot of my treatment is left. In my treatment of diseased apiaries in the Province I had the brood saved in nearly every apiary until all hatched that would hatch, and from the brood in nearly all apiaries I increased the number of colonies as well as getting all cured. I also made a big success of getting fine crops for the owners. In 1898 I cured an apiary for J. B. Hall, of Woodstock, and saved all the brood that would hatch, and gave him an average of 144 sections of fine comb honey per colony, and his bees had plenty of stores to winter on, and made a perfect cure of every colony. You put it rather strong in claiming that my treatment "in every case means the loss of a lot of good brood"—the very thing I always saved. Wm. McEvoy, Woodburn, Ont., Can., Aug. 22.

It was not our purpose to discredit the McEvoy or any shaking-foundation treatment for the cure of brood diseases. Our only purpose was to draw attention to the fact that the shaking plan ordinarily involved the loss of considerable brood; for in most cases the bee-keeper burns up his brood-combs, frames and all. While it is possible to save a good deal of this brood by using perforated metal, in our opinion the great majority, fearing to take the risk of keeping infected material in the apiary, burn it up as soon as discovered.

Referring to the shaking treatment, variously known as the McEvoy, Quinby, or Jones method, we may say that it is the orthodox method of cure, and until we are absolutely sure of something better, it is the one that foul-brood inspectors and the average bee-keepers should employ. But in spite of this standard treatment, foul brood, both European and American, is spreading in this country—no question about that.

The Bureau of Entomology, Washington, D. C., has enough evidence to prove that beyond question. While it may be questionable policy to publish some of these new treatments, we have done so simply for the purpose of investigation; and if we can discover a shorter or better plan, we ought to do it. If a trade journal like our own were to suppress any knowledge of possible cures there would be danger of getting into a rut and staying there.

MOVING PICTURES FOR GLEANINGS; THE
PROFESSOR'S READING-MACHINE AND
THE "LONG-FELT WANT."

THE country is surfeited with literature. Much of it is fair, most of it is poor, and some of it good. We should like to read all of the good, of course; but as one noted college professor once said, "Some enterprising Yankee ought to get up a reading-machine by means of which we could digest quantities of literature which now we can not even look at." While the professor's scheme is impracticable, of course, yet the facetious remark expresses a "long-felt want" for some rapid and quick means of getting *ideas* without the long and laborious process of digging them out word by word and line by line from ordinary reading-matter.

Now, the editors of GLEANINGS hope, in a great measure, to meet this demand by giving every reader of these pages a chance to see how Mr. E. D. Townsend and some other prominent bee-keepers do every thing in their yards. In other words, we propose to give our subscribers a chance to see these men at work as they appear every day in the midst of the honey-flow. We propose to give them a chance to see every step in their manipulations from start to finish. This will be shown by a series of moving pictures—or, more exactly, a set of photos showing each separate step. Each pose will be numbered, with a proper line of reading under each one. Thus it will be possible for the reader to learn exactly how Mr. Townsend works, almost at a mere glance.

These pictures are going to cost us something; but we believe the investment will pay, because the world is full of busy people who can not afford to take the time to read long articles. Of course we shall publish our regular matter as heretofore; but we will use these "moving pictures" to supplement the rest of the journal.

While in Michigan we caught Mr. Townsend and his men in perhaps 75 different poses. There are a lot of little "tricks of the trade" that are shown by these snapshots. An expensive Graflex 4×5 camera costing \$150 was used to do this work; and the reader can imagine, therefore, that GLEANINGS has in store for him a treat.

But this is not all. Arrangements have been made with a number of prominent bee-keepers to secure a series of photos like this, and we are just about to take another trip to secure another bunch of pictures.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

A. DEWEY, page 533, says there are often two or three queens piping at once. A number of queens in a hive may be making noises at the same time; but, strictly speaking, is there ever more than one piping? The free virgin pipes, and then is heard in reply the *quahking* of one or several virgins in their cells. [See "Conversations with Doolittle."—ED.]

CHAS. W. HOPSEGET, shade may be best for bees, but your one hive in the shade doesn't prove it. It doesn't swarm, and my non-swarmers are the ones that yield record crops, shade or no shade. Try letting it swap places with one of the swarmers and poorer yielders, and see if the one in the shade does better and the other worse—page 497.

HALF A PINT of carbon bisulphide is advised for a stack of frames six stories high, p. 480. I made effective work with less than half that. [We usually succeed with less than half a pint also; but on one occasion we found some live moths in the honey after fumigating; and as we had every crack stopped tightly, we were afraid that we had not used enough of the bisulphide. Of course, the chemical might have been weak; but to be on the safe side we now use rather more than formerly, hence the advice, page 480.—ED.]

IF BEES breed late in the fall, they are late to begin breeding the following spring. If they stop rearing brood early in the fall they begin early the following spring. So says H. Hesse, *Leipz. Bztg.*, 116. [We question very much whether this is *always* true or even *generally* true. If the conditions are favorable in the spring, bees will rear brood, whether they did any late brood-rearing the previous fall or not. As a general thing a colony will not rear brood in the fall unless it has a young queen or it has been a good fall flow.—ED.]

M. T. PRITCHARD, what possible difference can it make whether a cell is in a cage or out, so long as it is in the same temperature? But there's no use trying to buck against cold facts, and you've made out your case, p. 946. Sorry; but thank you all the same.

Now here's something else that I believe you're just the man for. In the *American Bee Journal* for 1861 we are told that it is 17 days from the laying of the egg to the emergence of the virgin. Most authorities now say 16 days; but Cowan says 15. You please tell us. [We don't know; but we do know that conditions have a large influence. They may all be right.—ED.]

E. F. ROBINSON, p. 516, are you sure micro-organisms have nothing to do with bee-paralysis? *Calling* it paralysis doesn't make

it a disease analogous to paralysis in the human subject. Indeed, Cheshire, Vol. II., p. 570, attributes it to *Bacillus Gaytoni*. But it is doubtful if we know much about it. [We really know less of bee-paralysis than of any other bee-disease. Dr. Phillips has told us, however, that Dr. White will make an investigation of this disease as soon as he determines the cause of European foul brood.—ED.]

SAY, YOU, New Mexico Chap, page 515, please "notice" that I didn't think lack of ventilation was the *only* thing that caused swarming. I said "also." You are quite right that strength and crowding promote swarming; but bees will stand more crowding with ventilation than without it. But my chief grudge at you is for saying that a $\frac{3}{8}$ entrance gives less surplus than a $\frac{3}{4}$ one, and that ventilation retards egg production. If so, my two-inch entrance ought to make bad business. But I ought not to be too cock-sure about how things are your way.

CHALON FOWLS, page 508, has discovered anew the G. W. Demaree plan of preventing swarming, which was published many years ago. At the beginning of the honey-flow put all brood above excluder, or nearly all, and let the queen fill up the lower story afresh. [Chalon Fowls, if you will look again, did not claim the honor of the "discovery." You will see we quoted him as saying that he got the idea from "recent articles in some of the bee-papers." Indeed, we are not sure but he might, at the time, have mentioned the name of Mr. Demaree.—ED.]

SWARMS that have lodged in hollow trees or in walls of houses may be routed with carbolic acid, the crude acid being the better. Upon burning rags in a smoker, drop a few drops of the acid, then smoke lightly at first so as not to stupefy the bees. In a few minutes the bees will issue and settle as a swarm outside. Pounding below the place of the bees will help.—*L'Apiculteur*, p. 283. [This appears to us like a good suggestion. It would almost seem to us, however, that the carbolic-acid fumes would drive out only a part of the bees. If any of our readers have tried this we hope they will report.—ED.]

EARLY this year, my colonies appeared clean of foul brood; later it appeared in some colonies. Dr. Phillips says the usual thing is for it to appear early and then disappear. That looks as if my bees had got the disease again from surrounding apiaries. But I'm afraid some of it was the home product. It appeared in colonies that had been thrown upon foundation as well as others. Only a few bad cells in most cases, and colonies in general were very strong, and stored as I never knew bees to store before, until the terrible drouth stopped them. [You omitted to say, Dr. Miller, that the foul brood that is in your apiary is the European and not the American. What we want to know is whether the Alexander treatment actually effected a cure.—ED.]

OCCASIONALLY some one advocates putting frames of brood over sections. I've tried that and failed, and lately I tried it again for so short a time that I didn't think it would make much difference. But the sections were so darkened that they were knocked out of the first class. I don't know why, but the bees carry *down* bits of the black comb from above much more than they carry them *up* when the comb is the same distance below.

W. FISHER, you say, p. 532, that bees do not fly at the black net of one's veil. But they do in this locality. You're no doubt right that they don't like a hairy surface, and they will sting white, but they have a special dislike to black. I've seen a cluster of cross bees persistently attacking the black head of a large pin in a lady's bee-hat. Certainly it was not the rough surface, for it was smooth glass. [There can be no question that bees are much more inclined to sting dark garments than light-colored ones. Just a few days ago the editor and Mr. E. D. Townsend were opening up some hives in one of his apiaries in Northern Michigan. The day was unfavorable, and the bees were cross. We had on a dark suit, while Mr. Townsend had on a light one. The bees attacked us more furiously than they did him; and the observation was made at the time that it was the dark clothing that attracted the bees.—ED.]

THAT CONFLICT between Stewart and Alexander doesn't look any less to me, Mr. Editor, after reading your footnote, p. 476. You say, "Stewart brings out the point that the colonies must be *very strong* in order to clean out foul brood—that an *ordinary* stock will not do it Alexander, on the other hand, apparently referred to ordinary colonies." You forget. Page 1125, 1905, Mr. Alexander gave as the first step in the treatment to build up the colonies by giving frames of maturing brood or by uniting two or more colonies. That point I have since emphasized more than once, and on p. 144, this year, Irving Grover says, "Mr. Alexander advised making all colonies strong," and the sub head of his article reads, "All Depends on Having the Colonies Strong." Yet with all that strengthening, Mr. Alexander says, GLEANINGS, 1907, p. 166, "You might as well expect to cure American foul brood by throwing a cup of cold water in the grass in front of your hives." [We give up. You are right that there was a conflict of opinion; but Alexander may have been wrong, as he never had much American foul brood.—ED.]

GEO. W. MAXWELL seems to think, page 534, that a super of honey can not be loosened of propolis and all the sections taken out without a ten-per-cent breakage. If there is no misprint in the case, there must be something wrong about the supers or the manner of taking out. I said to my assistant, "In taking sections out of ten supers, how many sections would you expect to be broken?" "Not one," she replied. "We

never expect any sections to be broken in taking them out of supers." [You did not explain, doctor, that sometimes it takes a *little time* before propolis will let go. A slow easy push will crowd sections out of a super when a quick hard push will break a number of them. Of course, something depends on the temperature of the day when the work is being done. In the same way a mule team will start a load, when a fine span of horses will break whiffletrees and accomplish nothing. The mules will bend down to their load and pull steady, while the horses will rush forward with a crash and a bang, and, of course, something has to let go.—ED.]

FEEDING at a distance is highly commended, *L'Apiculteur*, 274, as being more like a natural flow, and better for the health of the bees. Interesting is the assertion that any particular colony or colonies may be fed at a distance without having other colonies participate. Place the feeder some rods distant—the further the better. Two hours before night, place at the entrance a frame of honey; and when bees have gathered on it put it in a hive covered with burlap and carry it to the place of the feeder. At the same time the next evening they will not need to be baited. [This brings out the fact that a case of robbing is often participated in by not more than one or two colonies in the yard. If it is allowed to continue, the uproar will attract the other bees. We know by experience that it is not always easy to start long-distance feeding. We get the bees started by placing the feeder close to the hive; and then when the bees get to work on it a little, carry it (bees and all) to the point desired. If the robbers get started they will follow the feeder as it is being carried; then when it is placed they will go back to it readily.—ED.]

YE EDITOR, page 520, thinks he saw here splinted combs that were built wavy. Have you not got that mixed with another thing, Mr. Editor? When a comb is filled with honey, and sealed, no sign of the splint shows on the surface. But let it be filled with brood, and an elevated line in the capping shows where the splint is, because a cell over a splint must project enough to make it the same depth as other sealed cells. In some cases sighting lengthwise of the comb shows a very slight sagging between splints, but I have never noted a single case of waviness such as mentioned on page 519. [If you will turn again to page 520 you will see that we did not say that we saw wavy splinted combs at Marengo, although in the connection given you might infer so. Our vertical wires are imbedded solidly in the foundation. As you say you see no waviness, it is just possible that the foundation actually slips on your splints because the connection can not be very strong; but it could not possibly slip on the *imbedded* wires, because they are *in the base of the midrib*, placed there while hot from a current of electricity.—ED.]

Bee-keeping in Southern California

BY MRS. H. G. ACKLIN, GLENDORA, CAL.

Mr. J. E. Pleasants, Apiary Inspector of Orange County, reports foul brood nearly eliminated from his district. Those people should be happy; also the bees.



Of all the brilliancy I ever witnessed, a full-blown Southern California moonlight night overtops it all. Probably this is not in line with bee-keeping notes, but I think bees might work better on those nights than on cloudy days.



The little workers in the Santa Monica Mountains are doing their level best to get square with the world again. Advices from both Mr. C. C. Schubert and Mrs. D. K. Smith are to the effect that honey has been coming in fairly well the past few weeks.



A bee-keeping friend near Sierra Madre thinks the solution of the problem of eight or ten frame hives is very simple. Have only one width, and that ten-frame, and when an eight-frame is desired, put in division-boards the thickness of a frame on each side. Personally, I think if only ten-frame hives were made, bee-keepers would in a short time consign to the woodshed the follower-boards, and thank their lucky stars for having been obliged to adopt the ten-frame hive.



A bee-keeper near Hollywood has had the misfortune of getting foul brood into his apiary of 210 colonies by feeding honey for stimulating purposes last spring. The honey was bought from an acquaintance, and was supposed to be all right, but dire consequences followed. Ninety per cent of the colonies were treated, with the assistance of the inspector, and there is no surety but the others may have the disease later on. The bees were in fine working condition, and the forage good when the disease was discovered. Just imagine what a loss this brother has sustained, not mentioning the work and worry. Better not feed honey under any circumstances, no matter where it comes from.



Mr. W. R. Wiggins, President of the Los Angeles Co. Bee-keepers' Club, has a unique method for watering his bees. It is an inverted five-gallon water-bottle in its swinging frame set on a box about two feet high. Underneath the mouth of the bottle is placed a granite pie-tin in which is a piece of burlap. Water escapes from the bottle

as fast as the bees take it from the tin. Some salt is sprinkled on the burlap, and this bottle of water lasts his apiary of 110 colonies about a week. Mr. Wiggins' bees are placed in a young eucalyptus grove, and are always in the shade, so the bottle of water lasts them much longer than it would the same number exposed to the eternal sunshine. This apiary is located in East Los Angeles, just outside the city limits, and did fairly well the first part of the season on eucalyptus blossoms and hoarhound.



A dry season with us means not only no honey and great loss to bee-keepers, but in some instances, at least, death to all queens. In a paper read at our club meeting June 4, Mr. Grenville J. Lynn, of Los Angeles, advocated killing all queens as soon as it was found no honey was in sight—one provision being that the colonies should be strong enough in bees to keep up for a month. The principal advantages he claims for this method are the cessation of brood-rearing, thereby saving from 25 to 50 lbs. of honey per colony, and that there are all young queens to start a new season with. It seems to me I can, with the naked eye, see some disadvantages, so would advise the beginner to go slow on this proposition. Test a few colonies and watch results. But in the meantime let us hope that this wholesale slaughter will not be necessary again for many years.



Instead of putting in so much time, energy, and brain force trying to prevent after-swarming, why not settle the whole problem at one stroke when the first swarm issues? That it is very easy, and can be done, I know from experience; and that it is as practical in this as in other States I have recently learned from an extensive bee-keeper who has practiced the same method for many years. When the swarm is in the air, or very soon after it begins to rush out, so as to be sure it is a real swarm, take the old hive away or simply turn the entrance another way and put an empty hive on the old stand to catch the field bees as they come in. Put the swarm in that hive and take the supers from the parent colony (bees and all) and put on the swarm, giving them an empty super at the same time if necessary, as the swarm must have plenty of room. At your convenience set the parent colony where you want it. The swarming problem has been settled for these two colonies for the season. Sometimes it might be necessary to give the swarm a frame of eggs and larvæ from the parent colony if they show a disposition to swarm out; and one can make the parent colony doubly sure by cutting queen-cells; but the last-named precautions are not necessary once in a hundred times. This little piece of information was suggested by the paper Mr. E. J. Barzen read at our June club meeting.

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

MORE GRADES OF HONEY.

The trend of the market demand seems to be for more grades in fruit. Most of the fruit associations are adopting this method of packing. I will not discuss whether it is the best way. The way the customers want the fruit put up is the determining factor here. If they will pay more for fruit put up in boxes all of even size and color, that is what we shall have to furnish them if we want the top price. The same thing is true of honey. The grocer wants 24-lb. boxes of honey as near alike in color, filling, and weight as a like number of boxes of breakfast food; and if we can supply him with this kind of honey we shall get the top prices. Four dollars per case of 24 sections can be had in Denver for this kind of honey throughout the year.



THE HONEY CROP.

Another failure will have to be recorded for Northern Colorado. Dry weather and grasshoppers seem to be the principal causes. The bees will average but four or five pounds of honey in the hives at this date, August 4. We are going to feed most of our colonies, and this will give them a good start to keep up their strength during the winter. This is the first season when not a single colony entered a super, and we did not put over sixty or seventy on the best hives that we thought might work in them should the flowers furnish nectar. Fully one-third of the hives have lost steadily in bees during the summer. The lack of a honey-flow seems to tell on the colonies, though there has been a little more than a living for the colonies of fair strength. The weaker ones have a hard time to keep any show of even unsealed honey in their combs. Perhaps a hundred out of our nine hundred have no sealed honey in the brood-nest, and, of course, nowhere else, as that is all they have to store in.

The Arkansas Valley reports some surplus, and the western slope is getting a good crop, as also are Utah and Idaho. Here in Northern Colorado we have just a little more than our share of failures—three out of four is our record for the last four years. But generally the bees have had enough to winter, but not so this season.



SHIPPING HONEY.

I agree with Mr. Crane, page 443, when he says that express shipments are more liable to breakage than freight. Express packages are handled on end, sidewise, or bottom side up. Then express rates are excessive, and in many places prohibitive. We who favor parcels post look with no too kindly feeling toward the high express rates that are charged, and then when the

shipments are badly broken the companies very rarely allow any claims for breakage. How many damage claims do you know of that the express companies have paid? I have yet to hear of the first one.

Yes, Mr. Crane, there is considerable breakage in freight shipments of comb honey out this way, but mainly when the cases are not crated at all. A good many ship honey this way; but as the breakage continues the practice will stop before long. There is little trouble, if any, when the cases are crated 150 or 200 lbs. to the crate and packed in straw. Speaking of shipping comb honey in glass-front cases without crating, I have noticed that it ships better to leave the glass fronts exposed; for when the glass is covered the freight-handlers do not know which is right side up, and are led to think that it makes no difference. Certainly if six or eight cases crated and packed in straw would not ship without breakage, the 25-case crate of Mr. Crane's would make it difficult for the freight-handlers to get the honey upside down.



HONEY FRAUDS AND COMMISSION MEN.

Those of us who have been favored with some surplus honey to sell are now looking around for a market for our honey. The dishonest commission man is also looking strenuously these days for easy marks. He cares little about the markets. He can quote the market what he wants to, for these fellows always have some exclusive customer to whom they can sell what we send to them at far above the market quotations—that is, they *say* they can in their circulars and post-card bogus quotations which are not quotations at all, but just juicy-looking baits to get us trustful creatures to send them our honey. I believe the larger commission men are reliable, and make prompt remittances; but many of them do not solicit commission deals. They buy outright. These shysters promise the big plums; and then if they get them they keep them for themselves. One of the most common practices among the commission men of average integrity is to send a lot of honey to another commission house to help sell out the lot if the sale is slow. They will take out two commissions of, say, ten per cent each, besides freight and drayage. This I do not consider honest, though it is practiced by quite a few. The Denver market receives honey in sixty-pound cans, and it soon candies. The commission man tries to sell these to the grocers; and as they can buy bottled honey that is attractive and will remain liquid for some time, the sixty-pound cans go begging. This is why some of the honest commission houses can not make satisfactory returns. The shyster, of course, will not make satisfactory returns any way. The rule for all of us is to know the market, and then produce an article that will be in quick demand in that market. Then we must know whom to market our honey through, and be able to tell a shyster by his promises.

Notes from Canada

By R. F. HOLTSMANN

FLOUR METHOD OF INTRODUCING QUEENS.

Mr. Joseph Gray, a well-known British bee-keeper, who originated the method of introducing queens by sprinkling flour, is spending the season with me, with the object of getting an insight into bee-keeping methods in America. A month from now I hope to be able to report my experience with this method of introducing.



A VARIABLE SEASON.

Under the above heading, page 219, *American Bee Journal*, friend Byer describes the Ontario season. Such it surely has been. If bees had been in good shape, no doubt a very large crop of honey would have been harvested. With me the season has not been quite the equal of last year. The flow was never as heavy as last year. This may, however, be the result of scarcity of clover in my section. I sometimes feel that those living in sections where the snow lies deep and long have an advantage over bee-keepers in my own section.



PRICES FOR HONEY IN ONTARIO.

The committee appointed by the Ontario Bee-keepers' Association has met, and, so far as I can learn now, decided that crop and other conditions warrant no material change in the price of honey. The price of most farm produce, particularly eggs, butter, and meat, has materially advanced during the past year. The honey crop, so far as I can judge, is not at all excessive, so that a decrease in price should scarcely be looked for; and owing to a partial failure in the Western wheat crop, the wisdom of an advance would be problematical.



AFTER THE CLOVER-FLOW.

Last season, here, July and August were very dry—so much so, in fact, that bees secured absolutely nothing, and young clover went into winter quarters in very bad shape. This year the opposite is the case. Bees have been gaining slightly; brood-rearing has been going on, and the condition of clover is good. In this section farmers are changing from clover to alfalfa, which does not improve the chance for a honey crop, as it rarely gives enough honey to show up in the brood-chamber. Some will say alfalfa yielded honey in Ontario this year. So it did; but it is not very often that we have as much moisture in the soil as we are having this season. That is why alfalfa yields this year.



BRITISH FOUL-BROOD LEGISLATION.

On page 273, *British Bee Journal*, appears the draft of a bill for the better prevention of bee-diseases. It is proposed to deal with

this matter under the "Diseases of Animals Act." It has puzzled me for years why this matter should not thus be dealt with in Canada. Bees are animals; infectious diseases in bees are even more dangerous to the health of neighboring bees than with other animals who have no wings to carry them long distances. The welfare of many classes is involved in stamping out the disease. The owner of other animals calls in a veterinary surgeon in case of disease if he requires skilled help. Why should a bee-keeper not have the same chance? Why should a veterinary college not instruct students in this disease of animals, and a veterinary surgeon be fitted to detect foul brood and give the help needed for a cure?



COLOR OF VIRGIN WAX.

Louis Macy, on page 223, *American Bee Journal*, in commenting on the color of wax, says: "Doesn't locality or the color of the honey it is made from decide this? Our honey is water-white—from sweet clover and alfalfa; and the freshly made comb is also quite white. I think the yellowing with age is due not only to the heat but also to the bees crawling over it (probably rubbing on some pollen or propolis), as I have observed some little comb built outside a division-board and left alone remained white longer than that built at the same in used frames."

I have noticed that when the bees worked on goldenrod, the combs were yellow from the pollen, and no doubt propolis has a part in coloring wax. Buckwheat honey which is quite dark, however, produces wax in appearance as white as any. Is it not possible that the color of the grains of pollen in the honey from which the wax is produced has an effect upon the color of the wax?



WHY BEES FEAR SMOKE.

Editor York, of the *American Bee Journal*, does not appear to have much faith in the theory that bees have learned by experience to dread smoke through being hunted by natives in their natural haunts. On page 214 of the *Journal* he argues that such colonies have been destroyed, and therefore can not transmit this fear to posterity. I have very little faith in changing the disposition or nature of a strain of bees by environments and conditions. No doubt there is such a thing as the survival of the fittest, but that is quite a different thing. In lands where bees are much tampered with I would expect that there would be a survival of those that would best defend themselves. In civilized countries where we value gentleness, I would expect the gradual development of more gentle bees. Have our bees learned to look upon a dose of smoke in the spring as an indication that a bee-keeper is going his rounds to see if, by feeding for stores or in any other way, he can help the colony along to yield more honey. If not, how many generations will it take to teach them?

Conversations with Doolittle

At Borodino

NATURAL SWARMING; THE EMERGING OF QUEENS, ETC.

"I am all mixed up on natural swarming. I was told in the spring, by one I considered a practical bee-keeper, that bees would swarm at the commencement of the honey harvest; and that if more than one swarm was cast from any colony, the second swarm would come twelve days later, while if a third swarm came, it would be four days later still, or sixteen days after the first swarm."

"At least forty years' experience tells me that swarming is not conducted like that, unless, perchance, rainy weather has interfered with the plans of the bees, which it could not to such an extent once in a quarter of a century. The rule for all first or prime swarms is that they issue with the sealing of the first queen-cell, queen-cells for swarming being constructed in accord with the prosperity of the colony. And as a flow of nectar from the fields has much to do with this prosperity, all good colonies, not interfered with by plans for delaying swarming, may be expected to swarm during the first half of a good flow of nectar, the sealing of queen-cells telling the day when any individual colony will swarm. Very early swarms do not issue till the hive is pretty well crowded with bees, even to such an extent that a part of the bees are crowded on the outside of the hive; but later swarms may issue before the hives become crowded at all. Now, the pupa remains sealed over in a queen-cell only seven days, on the average; and, after emerging, the queen from this cell becomes strong enough to lead out a second swarm two days later; so the rule is, if the colony continues prosperous the second swarm will issue nine days after the first one leaves the hive.

"About ten or twelve hours after the first young queen emerges from her cell she begins to utter a peculiar sharp sound which is called 'piping,' and this sound can be heard by putting the ear to the side of the hive the evening of the eighth day after the first swarm left, if the first swarm issued according to the general rule. When a young queen commences to pipe I have never known the issuing of a second swarm to fail unless the object of the bees was thwarted by man or by exceptionally bad weather. An item worthy of note is that the weather must be very bad to keep after-swarms from issuing, for they often issue on cloudy days, or at the least streak of sunshine on a rainy day. Then, again, they come out at all hours of the day, from five in the morning till seven at night, while the time of issuing of the prime swarm is from 9 A.M. to 4 P.M.

"If the bees conclude to swarm still further, another queen is allowed her liberty, while the rest are kept confined in their

cells, being fed through holes made by the queens commencing to cut their way out, so they are virtually of the same age and strength as the one which has her liberty. The queen that is let loose begins piping at once, keeping it up for about the same length of time the others did, so that the third swarm comes two days after the second, or eleven days after the first. It sometimes happens that a fourth and even a fifth swarm issues, and in such cases they come out the next day after the issuing of the preceding swarm. But the issuing of all after-swarms is announced by the piping of the queen; and as long as you can hear piping from any hive you may know that a swarm is expected to issue. As soon as the piping of a queen is heard, shake the bees off every comb, and cut off all the queen-cells, for the queens in these cells are the disturbing factors. If you do not miss any, the colony will swarm no more."

"But are there not more queens than one heard piping at times?"

"Yes. To make the matter a little plainer, a young queen may mature and emerge from her cell two or more days before any of her rival sisters come to maturity; but so far as I have observed, she rarely if ever pipes till some of those sisters do mature. As soon as this occurs, the first emerged seems to get in a rage and begins to pipe; and from six to eight hours after maturity, although kept back in their cells, these rivals begin also, often half a dozen answering at a time. This last has been named 'quahking,' I believe, although those in the cells are doing the same as is the one having her liberty, so far as they can in the restricted walls of the cells.

"If any of the queens kept back in the cells arrive at full maturity, and are strong enough when the second swarm issues, they will, during the confusion of swarming, finish biting the cover from their cells and rush out with the swarm. However, it is a rare thing to find more than two or three queens with a second swarm, only one being the general rule. Now, if a third swarm is to issue, the guards collect about the cells again, allowing only one of the mature queens her liberty, and keeping the rest by feeding them as I spoke of before. At their swarming there are fewer bees and more mature queens, so that, when the cell-guards become routed by the hurry and bustle of another swarm, more queens leave the cells. In one case I found 15 in one third swarm, and 20 in a fourth from a Cyprian swarm.

"All queens which can fly on emerging from their cells must have matured from eight hours to a week before, being kept back and fed in the cells by the guard-bees. Young queens will emerge in the nursery cages when they are so white and feeble that they will stagger about like drunken men. But it is no uncommon thing for queens with the fourth or fifth after-swarm to become fertile and laying three days after, if the same swarm is placed in a hive containing combs."

General Correspondence

PERCOLATING OR SELF-ACTING SYRUP-FEEDERS.

Something Invaluable for Out-apiaries.

BY SAMUEL SIMMINS.

In the early 80's I was able to offer beekeepers several feeders of peculiar construction, enabling them to feed without boiling the syrup. One has simply to put in the lump sugar and water, cold or warm as desired, in the proportion of 2 lbs. of sugar to one pint of water; and without any stirring or shaking up, that quantity of water will combine with the lump sugar, forming syrup of the desired consistency for winter storage; while for spring feeding or times of scarcity in warm weather a slightly larger proportion of water will, of course, act more rapidly.

The lump* sugar is raised or suspended in a perforated chamber so that it can not clog or settle in a mass on the main base of the feeder,† and hence in a few minutes it is reduced to the form of syrup of the correct consistency. Syrup cans, as well as large cisterns, were adapted to the same principle; but where used as cisterns for reducing large quantities it is found an advantage to place the sugar in a bag within the metal strainer.

The illustration of the self-acting syrup-can, Fig. 1, will explain the construction of a larger cistern, except that the latter has a honey-valve or tap instead of a spout for drawing off the syrup. My circular "Amateur" all-metal feeder, shown in circular

* Neither raw nor moist sugars appear to be desirable as winter feed in severe climates.

† This point is of great importance. If sugar once clogs the floor of the feeder it can not be taken up by the water in the form required.

form, Fig. 2, for use over a hole in the quilt or crown board, is, perhaps, the most remarkable illustration of the perfect manner in which the syrup and water amalgamate, and is a sketch of the very first model that was made to fit my theory that sugar so suspended in water would act in the manner I required.

I have always used the proportion of two pounds of loaf sugar to one pint of water as winter feed, and no granulation takes place, though no acids are used. Where sugar is boiled in making syrup, too much moisture is evaporated, and consequently the food granulates after storing. Hence when I have been frequently asked for my opinion upon this trouble I have always advised that, when made over a fire, the sugar syrup be heated no longer than is necessary for melting the whole by constant stirring meanwhile, to hasten the process; moreover, it is desirable to pour boiling water into the sugar for the same reason where no percolator is used.

Though it is desirable to use water at quite 100° for autumn feeding, I may say that the self-acting feeders answer quite as well (as far as the process is concerned), when cold water is first inserted.

Feeding above the frames, for which my circular self-acting feeder was designed, is largely adopted in Great Britain; but it has never been a favorite way with myself, as I use no holes through the covers (quilts or

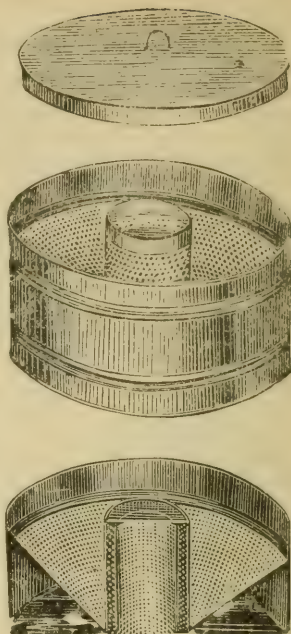


Fig. 2.—Circular "Amateur" feeder, lower part in cross-section, the central passage $1\frac{1}{2}$ in. diameter; and $\frac{3}{4}$ in. space where bees take food all round the center is capped with a glass top.

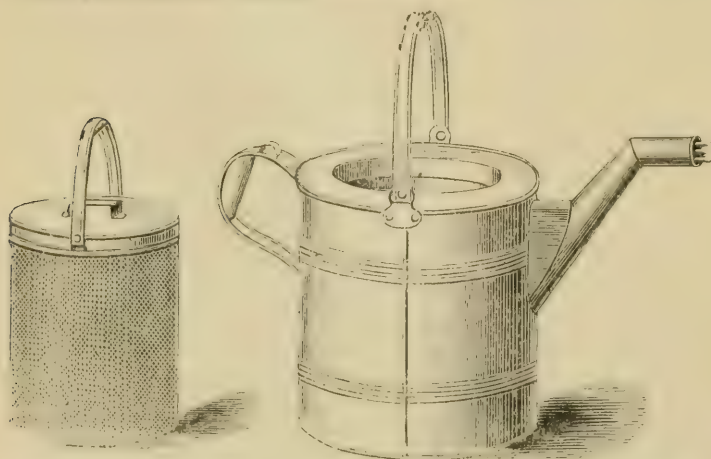


Fig. 1.—Simmins' self-acting syrup-can. The sugar-container (at the left) is held one inch from sides and bottom.

boards) for that purpose. Consequently I also designed self-acting frame feeders after the pattern of my earlier float feeders; but instead of the float a narrow passage was allowed down the whole of one side of the feeder, next the bees—the syrup perco-

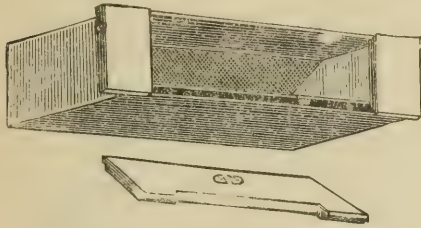


Fig. 3.—Self-acting frame syrup-feeder.

lating through perforated metal parallel to that side, and the sugar also kept from the base (until melted) by a further arched strainer, Fig. 3. Thus the sugar and water amalgamate as in the circular feeder and other styles.

Fig. 4 shows the self-acting principle adapted to a shallow feeder extending over the full surface of an ordinary hive. This feeder is made in two sections, with a bee-

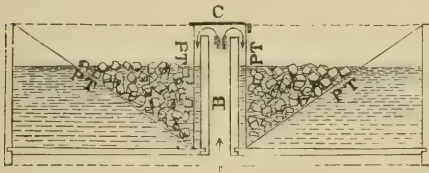


Fig. 4.—Sectional view of Simmins' self-acting syrup-feeders (non-cooking or cold-water process).

passage up from the stock, marked B, and indicated by arrows, the bees taking the food from the secondary passages on either side. The joints are tongued and painted when fitted. The letters P T denote the

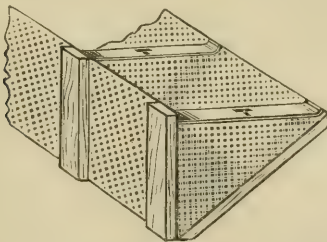


Fig. 5.—The perforated strainer for holding sugar away from the base while amalgamating with the water.

perforated tin, which is stayed by suitable bars, and this part is removable, as Fig. 5. A feeder of this kind will finish any needy stock by once filling, and, of course, can be quickly shifted round to other stocks, so that a limited number will do a lot of work, and all without any trouble in making syrup. Zinc should not be used in feeders of this or any other kind. The accompanying illustrations were first published in my 1886

and 1888 editions of my work, and were in use by me several years before the earlier date.

WHEN TO FEED FOR WINTER.

This is a question that most practical owners have decided for themselves; but in cold localities, or where no honey is gathered after August, there can be nothing but good results to follow when feeding can be finished quickly after that month. In the early 70's I remember securing some condemned bees from a cottager late in the year, and these I fed up in November with a lot of syrup which they failed to cap over. They had no cells empty; and while thus clustered between these combs a few days of frost occurred in December, such as normal stocks would not notice. Upon examination a day or two after the cold spell I found the whole lot dead while sitting upon an abundance of stores.

I never forgot that lesson; and I am fully in accord with the recent remarks of the editor regarding early and rapid feeding in autumn, as the following quotations from my work explain: "Rapid feeding insures a high temperature, and this high temperature insures sealing of the combs so stored; then a dry atmosphere. . . . From that time, without any further attention, breeding will steadily go on until most of the uncapped stores will be used up, and finally sufficient empty cells will be found just where the bees decide to cluster in the usual compact mass."

That is just the point the editor has been insisting on; and where that condition is necessary for successful wintering, early and rapid feeding will always secure it, while there will be just enough brood reared to compensate for the wear and tear of storing.

But there are many localities where it is quite safe, perhaps safer even to feed up late, and the surcharged combs will result in no harm. Even in Canada Mr. McEvoy likes to feed his bees up so that they have no empty cells to cluster in for some considerable time, the combs being solidly capped. Doubtless when wintering indoors in a dry cellar the owner may find no trouble arises where his combs are so filled; or if also they may be largely unsealed, climate and methods of wintering will largely modify the conditions under consideration.

Heathfield, Sussex, Eng.

THEORY VS. PRACTICE IN THE ALEXANDER CURE FOR EUROPEAN FOUL BROOD.

BY EARL SEAMANS.

On page 490, Aug. 1, I notice an article by Alfred L. Hartl, criticising the Alexander plan for curing European foul brood. It seems to me you might use the valuable space in your paper to better advantage than to print such articles from one who says that he has had no experience with European

foul brood. I have read the Alexander book⁷ and, unlike Mr. Hartl, I *have had some experience with European foul brood*. Mr. Alexander fought the disease for years, and after losing a thousand colonies he found a positive cure for it. By following his teachings I have rid my own apiary of the disease. One of my neighbors cleaned his yard of 70 colonies by following the Alexander plan.

Mr. Alexander was a great man, and his writings are of great value.

European foul brood made great headway in this (Wyoming) county last year. Hundreds of colonies died from the effects of the disease. In my own experience I found that weak colonies were not good to clean out combs of diseased brood. The plan I like best is, first, to buy untested Italian queens; second, when the queens arrive, go to your diseased colonies (in the forenoon) and kill the queens; third, in the afternoon (three or four hours after killing the queens) put a caged Italian queen in each hive; fourth, the next day lift out all combs, brood, bees, and caged queen from each diseased hive; put back a frame of brood from a healthy colony, and fill out the hive with clean combs or sheets of foundation; then shake the bees in front of the hive; open the queen-cage and run the queen in with the bees. The frames of diseased brood I put on strong colonies over queen-excluders. The bees soon clean them out, and not one of those colonies I put diseased brood on developed the disease.

Why does not the disease develop in those colonies that I put foul brood on top over excluders? Theory says, "It will;" practice proves it will not.

Last spring I had a diseased colony with a nice yellow queen that I did not want to kill. I took out all their brood and combs, giving them a new clean lot of combs. In one month they were full of foul brood again. The queen certainly was to blame there. I have hived swarms that died of European foul brood, and they got the disease. One of my neighbors spent \$30.00 or \$40.00 for queens last year, and put them into diseased colonies, and lost all. This same neighbor last August, during the buckwheat flow, shook all his diseased colonies on full sheets of foundation, and all died during winter.

Factoryville, Pa.

WHAT IS THE COST OF HONEY TO THE PRODUCER?

Should a Higher Selling Price be Expected?

BY F. L. POLLOCK.

Like most bee-keepers I have felt surprised at the fact that honey has not advanced in price correspondingly with other food products, and it has almost seemed that the honey-producer was somehow being discriminated against. It occurred to me, however, that no one seems to have attempted to calculate just what a pound of honey is worth

—what it actually costs to produce it, allowing a fair commercial profit. When I began to make this calculation I quite expected that the figures would show honey to be worth at least 15 cents a pound. They do not quite do that, but they seem worthy of consideration.

Let us take the apiary of a man who owns 200 colonies. If he owns many less than that he can hardly be considered a specialist bee-keeper, for his bees will not take all his time nor afford him a living, while 200 colonies are about the limit of one man's ability without employing labor.

These 200 colonies may be estimated as worth, with all fixtures, about \$1500. An allowance of ten per cent on this makes \$150 annually for interest and depreciation.

During four months of the year the owner will probably spend an average of about six hours a day with the bees, counting rainy days and all, or about 700 hours for the summer. During the eight months of off season he will not work more than 300 hours more, making a total of a thousand hours. Allowing him payment at the rate of forty cents an hour, his own labor is worth annually about \$400. The up-keep of a horse may be estimated at \$150 a year, and a further allowance of \$50 may be made for labor during extracting, requeening, and incidentals. The account stands, therefore:

Interest on capital invested	\$150.00
Owner's labor	400.00
Maintenance of horse	150.00
Miscellaneous	50.00
Total	\$750.00

Allowing a profit of twenty per cent on this total investment brings the sum up to \$900, which is the amount that the bee-keeper should receive from his crop.

In a fair average locality, taking one year with another, these 200 colonies will store a surplus of at least 50 lbs. of white honey per colony, or 10,000 lbs. for the apiary. A net wholesale price of 9 cents per lb. is, therefore, demanded, or perhaps 9½ cents to cover cost of packages and freight.

When there is a buckwheat flow amounting to as much as 30 lbs. per colony, this price can be greatly reduced, for the fall flow adds comparatively little to the bill for labor. A price of 5 cts. for the dark honey and 7 cts. for the light will make the total receipts \$1000. This may seem dangerous doctrine to publish, and it is certainly unpleasant. I should be glad to see honey maintained legitimately at 12 to 15 cents, and I shall be obliged to any one who will prove my calculations wrong.

But it may be that honey has not advanced in price, simply because it is as high as it should be. In that case the way for the bee-keeper to make more money is not to seek to raise prices, but to keep more bees, to cooperate for a systematic, businesslike handling of the crop without glutting the market, and to develop the trade by suitable coöperative advertising, as other food-producers do.

Stouffville, Ont., Can.



FIG. 1.—CUTTING OATS CLOSE TO AN APIARY.

The flight of the bees, on a line with the top of the fence, encountered the revolving reel of the binder.

BEES ATTACKING A SELF-BINDER RIG.

Some Experience at The Root Company's North Yard.

BY E. R. ROOT.

A few days ago we received a telephone message from a farmer, saying that our bees were attacking his man and horses operating a self-binder that was cutting the grain next to our line fence. We sent a man down, and found, true enough, that the bees going to and from the yard were attacking both man and horses. There had been a little rain the night before, and the nectar

secretion had stopped. Apparently the bees had gone to the fields as usual, and, not finding any thing, returned to the yard not in the best of humor. As the self-binder approached the line fence next to the bees the revolving arms of the binder-reel through the mass of flying bees seemed to infuriate them. While they did not attack the horses enough to make any serious trouble, their owner, a good friend of ours, thought best to notify us, as we had told him that any time he had trouble we would come down if he would let us know.

The bees had already stung the driver and the horses; but so far he was handling them without assistance. After looking



Fig. 2.—Rear view of the binder and horses, the latter wearing blankets to protect them from stings.



Fig. 3.—When the team was in the flight of the bees the smoker was held in readiness should the horses be stung.

over the situation we decided to send down one of our best bee-men who was also an expert in handling horses. He was equipped with a Jumbo smoker, prepared to make a big smudge. The owner had already put on his horses large horse-blankets of a porous texture which we supplied last year. The driver was provided with a bee-veil, and then our man was given instructions to follow the team along that side of the field next to the bee-yard, so that, if any trouble should develop, he would be able to render assistance to the driver. Thus prepared we were able to handle the situation very easily, and in the course of a couple of hours nectar began to secrete, and the bees went merrily on to the fields without molesting either man or beast.

The large coarse-netting blankets protected the backs and necks of the horses. The rear flanks they could take care of with their tails, while a bee upon the face of the horse could easily be brushed off. Apparently bees seldom attack the legs or the under side of the animals, so that about all that is needed is a good-sized blanket with coarse mesh so as not to be warm.

Fig. 1 shows the high board fence next to the bee-yard on the right, the self-binder and our man clear to the end of the row. Fig. 2 shows a nearer view of the whole outfit just as the team was about to turn the corner; Fig. 3, the position of the man up near the heads of the horses.

Strangely enough, the bees seemed to quiet down after the man came. The trouble seemed to be more aggravated when the team was close to the line fence on the first round. As the grain was cut, the team would walk further and further away from the concentrated flight of the bees, hence the trouble would minimize as the day wore on.

While, perhaps, it may not be good policy to tell about bees stinging horses we think it is the province of a bee-journal to warn bee-keepers, and to show them how a situation of this kind can be handled in order to avoid damage suits, to say nothing about broken machinery and possible loss of life.

In view of former trouble we have about decided to move our bees late this fall away from this line fence and place them near the back end of the basswood orchard. At this point there would be no open field. The difficulty in our case seems to be because some 60 or 70 strong colonies are massed right along next to the high board fence. The concentrated flight just as the bees reach the fence seems to cause trouble when a rapidly moving object like the binder-reel passes through them. On the other side of this same bee-yard there is an open pasture lot on lower ground. There is never any trouble there, because the yard is located on high ground; and the bees, in passing, coming to and from the yard on that side, fly high above any horses or cattle; but in the view here shown the ground is higher, if any thing, than the bee-yard. The bees fly low, or just high enough to clear the grain. When, therefore, horses with switching tails and rapidly moving machinery pass through them it is apt to cause a little disturbance, especially if the bees are in bad humor in consequence of the honey-flow having just been shut off.

Heavy Wire for Supporting Foundation.

I have been using baling-wire for splints for the past two years, with good success. I use the wedge top-bar; insert wire with foundation in the groove; drive in the wedge, and wax the wires down with the Van Deusen wax-tube.
Metz, Cal., July 8.

H. E. THAYER.

ANOTHER VISIT WITH CHALON FOWLS DURING THE EXTRACTING SEASON.

Some Further Improvements in Capping-melters.

BY H. H. ROOT.

Our readers will recall that two years ago we spent considerable time with Mr. Chalon Fowls at Oberlin, Ohio, helping him extract and experimenting with various new melters. Our report of these experiments was given in the Nov. 15th issue for 1908, page 1375. We have been continuing the work this year, and Mr. Fowls now believes that he has almost an ideal equipment for rapidly extracting honey. On account of the somewhat crowded extracting-room it was almost impossible to locate the camera so as to get good interior views, but they serve to show something of the arrangement of the apparatus.

Mr. Fowls still uses his gasoline-engine, or, rather, his daughters use it, for they do perhaps the larger part of the extracting. This engine, by the way, although having been used for pumping water, off and on, during the winter months, is as good as new. New batteries have been put in two or three times, of course, and one new spark-plug bought. Fifteen minutes' work in tighten-

ing the bearings, etc., made the engine run even better than ever.

This year we have been making some experiments with a capping-melter made after the Peterson plan, first described page 559 of the May 1st issue, 1908. Some modifications have been made from the original plan, for the purpose of simplifying the outfit and enlarging its capacity. Fig. 1 shows the melter in position under the uncapping-table. There is nothing to the melter except a long shallow pan with a double bottom, and a trough opening from one end to allow honey and melted wax to run out, this end of the opening being about an inch lower than the other end, into which the cappings fall. An opening into the water-space is left at the upper end, large enough for a couple of knives if one desires to use a knife kept hot by hot water. This opening is also for the purpose of filling the melter with water. A two-burner oil-stove stands beneath the melter at the lower end, and the hot water heats thoroughly the large surface represented by the bottom of the pan. The cappings and honey, no matter how fast they drop from the combs, even when two are uncapping, begin to slide directly toward the lower end; and by the time they pass out of the trough the wax is melted. The honey and wax are not confined at all, and they pass

away from the heat in the smallest possible time. We have found that this construction of melter does not darken even the whitest bass-wood honey in the least.

If two uncappers are working, both burners of the stove should be used; but if there is only one operator, one of the burners may be turned down, or possibly turned off altogether. The large surface presented affords a capacity for melting cappings large enough for the most extensive producer.

The illustration shows further that the top of the table is so constructed that there is room for a large number of uncapped combs over the melting-pan, the honey that drips from them being thus

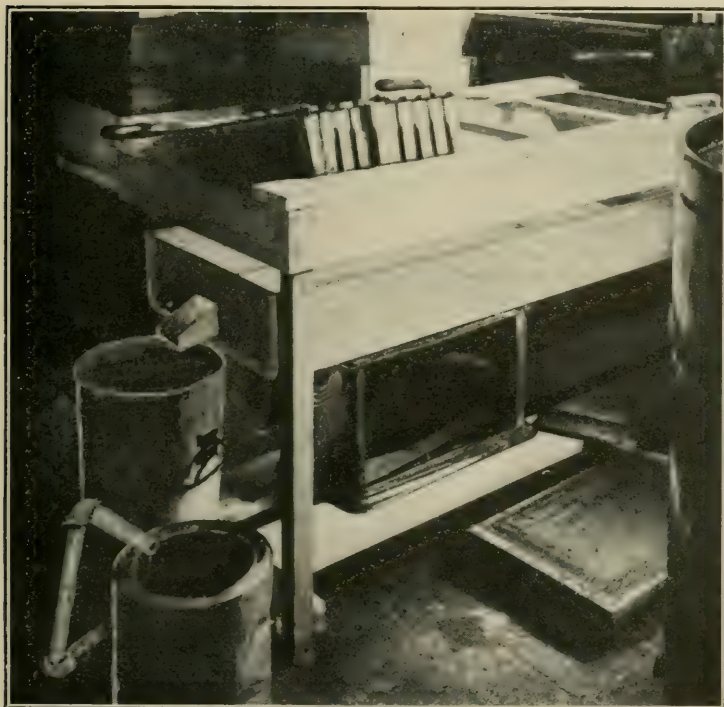


FIG. 1.—THE MODIFIED PETERSON CAPPING-MELTER AS USED AT OBERLIN.

The long pan under the table has a double bottom, the space between filled with water kept hot by the stove underneath. The wax and honey run out of the trough, away from the heat, in the shortest possible time.

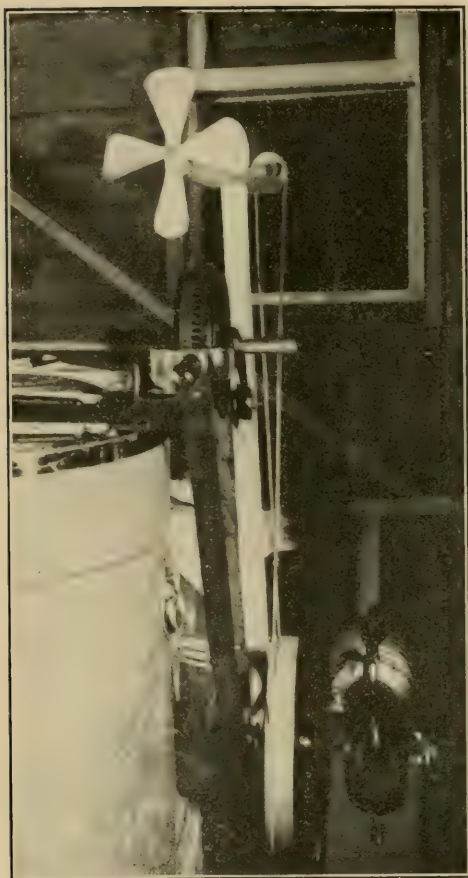


FIG. 2.—THE FAN USED TO COOL THE EXTRACTING-ROOM.

An ordinary sheet-metal fan is attached to a short shaft and run by a round sewing-machine belt from the fly-wheel of the engine.

taken care of without extra apparatus. If more than a thousand pounds of honey is to be extracted in a day, it pays to have a good large table on which to work, and it is certainly a great advantage to have one end of this table arranged according to the McIntyre plan for holding the uncapped combs.

HOW TO KEEP COOL.

When the weather is hot, several have mentioned that it is rather disagreeable to work over a capping-melter on account of the heat from the stove underneath. As it was very warm while we were working we arranged a small fan, run by a round belt from the fly-wheel of the engine. This fan was turned toward the uncapping-table, and there was no longer any thought of hot weather; in fact, it was much more comfortable in the extracting-room than anywhere else. At first we had the fan running too fast, and the blast of air was actually too much of a good thing, so we reduced the speed until it was just right. Fig. 2 shows how the fan was attached to the engine on the 2×4 bolted to the engine-base. The fan itself is made of sheet brass, and is similar to those used on small electric motors. There is no reason why a local tinsmith could not make one very cheaply out of galvanized iron, provided the blades were of equal size so that, when running, there would be no vibration due to lack of balance.

A GRAVITY STRAINER LOCATED IN THE BASEMENT.

In former years Mr. Fowls has used 75-lb. lard-cans for storing his honey, filling the cans under the strainer, which was located near the extractor. This year, however, the honey-flow was so heavy that there was no longer room for storing this honey in the extracting-room, and so, at an expense of about four dollars, a three-inch galvanized-iron conductor-pipe was run from the extracting-room to the basement of the dwelling-house some forty feet distant. Figs. 3



Fig. 3.—The pipe used by Chalon Fowls to convey honey from the extracting-room to the settling and straining tank in the basement of the dwelling-house.

and 4 show the amount of "fall" of the pipe and the general arrangement of the buildings. A settling-tank arranged after the plan described by E. D. Townsend in the *Bee-keepers' Review*, and mentioned in the July 1st number of GLEANINGS, page 402, is located so as to catch the stream of honey from the pipe. Mr. Fowls believes that this settling-tank will serve in lieu of a strainer, although he is not quite certain as to the results as yet, since he gets the bees out of his supers by means of bee-escapes, so that the honey, by the time

he extracts it, is no longer warm. Mr. Townsend brushes the bees from the combs, and extracts while the honey is still warm. Until using this settling-tank Mr. Fowls had considered the Alexander strainer ahead of any thing that he had ever tried before. No one, who has never tried conveying honey away from the extractor by means of a pipe, can realize what a convenience it is. It is almost like extracting honey without having the honey to bother with.

THE STEAM UNCAPPING-KNIFE.

If new combs are uncapped, the steam-knife is certainly a great advantage. Mr. Fowls, however, does not extract to any extent from combs until some brood has been reared in them to stiffen them. When a set of extracting-combs are thus used over and over, the midrib, or main part of the comb untouched by the uncapping-knife, becomes hard and tough, and the new fresh comb outside and the cappings are then very easy to remove with a cold knife. Under such ideal conditions there is probably no great advantage in the steam-heated knife.

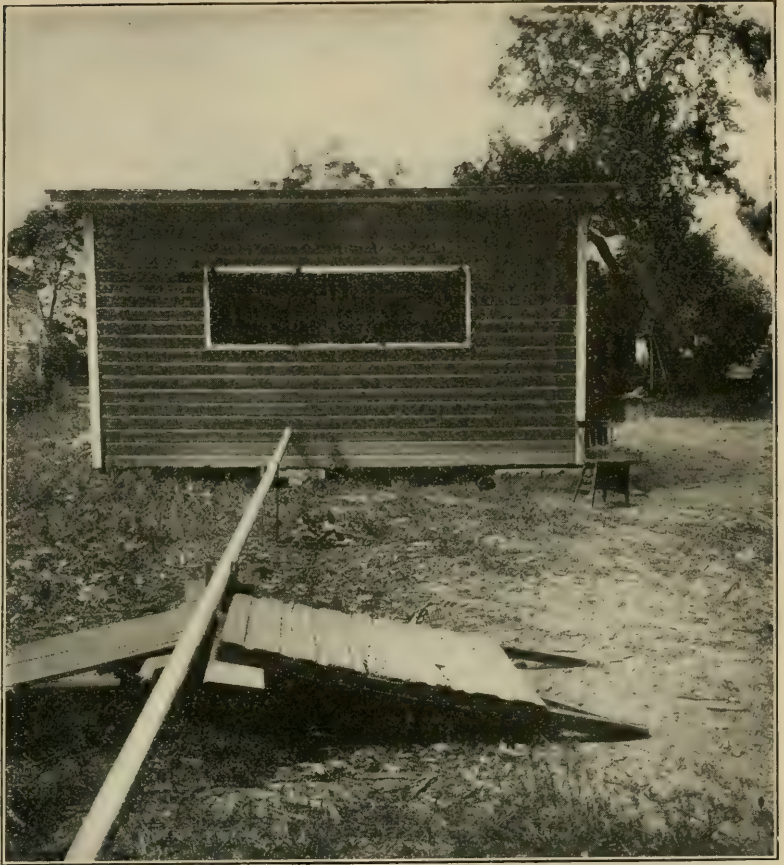


Fig 4.—Another view of the honey-pipe. The distance is about 40 feet, and the pipe, being made of galvanized iron, cost about \$4.00.

A NEW BEE-VEIL.

Sometimes an old veteran in bee-keeping boasts of the fact that he never notices whether he gets stung or not; but Mr. Fowls says that the more he works with bees the less he likes to be stung. He has never been entirely satisfied with any of the bee-veils that he has tried, and accordingly he constructed one that suits his own particular requirements. Fig. 5 shows the construction of the veil. A shirt is first put on, which is made of common denim, and this is worn over the ordinary shirt in place of a coat. As will be seen, it is gathered about the waist with a string, and a stout wire hoop is firmly sewed into the material around the neck to take the place of a collar. The veil has a rubber cord around the bottom; and when this is pulled down over the wire hoop, the tension of the cord keeps it tight enough so that there is not the slightest possibility for a bee to get in. Another rubber cord keeps the top of the veil tight around the crown of the hat.

There are a number of advantages in this veil, which do not appear at first sight.



FIG. 5.—MR. FOWLS' NEW BEE-VEIL.

The rubber cord at the bottom of the veil pulls down over the wire hook which takes the place of a collar on the over-shirt.

First, it gives perfect freedom for the movement of the head and arms, and it also provides shade for the back of the neck; for the back of the veil, instead of being constructed of the netting, is of white cloth. Second, the veil can be instantly raised or lowered, as there are no strings or pins to bother with. The second view shows the veil thrown up over the hat out of the way, and the third shows it removed entirely from the hat.

LOCAL ADVERTISING BY BEE-KEEPERS.

How should Honey Advertisements be Worded?

BY A. F. BONNEY.

It is an axiom in the advertising world, that, to make advertising successful, you must have something to sell; that something must be a thing already in demand, or for which a demand may be created—something good to eat, drink, wear, or in some other way enter into the economies of modern life.

It is, to the bee-keeper, a lamentable fact, that, while all other articles of food have gone up in price, honey has not; that it sells, generally, for about the same price it did ten or twenty years ago, judging by what we read from the pens of the older men engaged in the craft. Several reasons are given for this, one being that it enters directly into competition with the syrups, cane, sorghum, and the messes made from corn starch, and allowed to be called syrup by an idiotic decision of the powers that be. This may be true, but I doubt it; and lately the idea was impressed on my mind when I said to an old farmer customer:

"John, let me sell you a five-gallon can of nice clover honey."

He scratched his chin, meditated a moment, then said in reply: "I like honey,

and so do the rest of the family; but *we do not like it all the time.*"

I have been studying on advertising for my own crop, trying to formulate an advertisement which would sell my honey, and I noticed that the members of my own family do not eat honey all the time; but why, I can not imagine. Even in my own case, as fond of the sweet as I am, there are times that I care actually nothing for it; and I incline to the opinion that the general public is the same; and with this difficulty presented I think I know how to write a honey advertisement.

It is hardly a tenable theory that everybody will want or not want honey at the same time; therefore an advertisement which will appeal to the public at one time will all the time. This applies to other things than honey; and, no matter what your advertisement is, be it large or small, plain or in colors, with your portrait or without, the fact that *somewhere somebody* wants honey calls for a continuous string of advertising—something which everybody will see all the time, so that, when they want honey, they will want *your* product; and to that end *you must have a distinctive name for your goods*, and that name must be something agreeable, something which will point to yourself, something suggestive of honey. It must be true, for nothing is quicker overtaken by retribution than a lying advertisement. You can not fool enough people with it all the time to make it pay its cost.

Another axiom in advertising is: What will please a large number of persons will very likely please everybody. A big black cross followed by "John Smith's Pure Comb Honey" would not make a good advertisement, because suggestive of mourning; but make the cross crimson or gold, and it would probably pass; however, a nice picture of a honey-bee would be far better, while for local or county trade the bee-keeper's portrait

in connection with a short, well-worded advertisement might be just what was wanted; but, no matter how well an advertisement is written, how nicely it is illustrated, if it is run but once in a while, by fits and jerks, the bee-keeper will probably decide that advertising does not pay, and he will be right, from his view-point.

What, let me suggest, can be better for an advertisement or label than a man's name in connection with the word honey? I am getting ready labels to read:

PURE EXTRACTED
BONNEY HONEY
From the Bonney Apiary,
Buck Grove, Iowa.

For a standing advertisement I shall use an inch space to run all the time. This will cost a matter of \$5.00 to \$6.00 a year, and the printer takes his pay in pure Bonney honey.

It is my humble opinion that spasmodic publications of small or large reading notices as to the value of honey as a food, cosmetic, or medicine will not pay, because the public will not read them, would not understand if it should, and does not believe so soon as the fact crops out that it is an advertisement; and unless the printer can be persuaded to run the advertisements as "cheap copy" it will cost a great deal. From talking with three or four gentlemen who keep bees I find that they never advertise, and never use even a label, but dispose of their crop by peddling and in the local stores. One of these men has 90 colonies.

That the demand for honey may be permanently increased by judicious advertising I do not doubt, because in some places sections which will not weigh more than 14 ounces retail for 20 to 25 cents, and in large cities possibly more. Even in this rural hamlet I get 15 cents, or two for 25 cents, and have, ever since I began keeping bees, got 10 cents a pound for extracted honey, though I am now selling in 60-lb. lots at 9 cents, and this with practically no advertising. I intend next season to increase to 100 colonies, and hope by advertising to be able to sell locally the bulk of my crop, and thereby get a little better price than if I were to ship.

Buck Grove, Iowa.

A Bird that Sucked the Honey from Bees.

On June 4, while among the bees I was attracted by a humming noise which sounded strange although familiar. It was a hummingbird catching returning workers. I watched this performance for at least five minutes, and then the little outlaw flew away. Upon examining the victims I found a tiny hole on or in the under side of the bee, directly over the honey-sac. Why and how this bird learned this trick I do not know; but I do know that it or another bird very much like it returned to the same hive the next day, but flew directly away.

Montpelier, O., July 21.

G. W. JOICE.

BEEES AND COLOR.

A Study of Different Races of Bees.

BY G. W. BULLAMORE.

Some years ago the Italian bee was largely imported by southern-English bee-keepers. Carniolans also were tried by many bee-keepers who had heard of their non-stinging disposition. At the present day almost all English black bees show a trace of foreign blood; and if outward traces disappeared entirely I should be chary of supposing that all foreign qualities had disappeared. Hundreds of lots of driven bees are yearly sent to Scotland and to the north of England, so that this type of bee must be general. It is a black bee in the sense that the "Red Bones" of South Carolina are American Indians.

Dr. Miller is probably right when he suggests that the black bee of England and Scotland differs from that of America.

On many debatable points it is difficult to decide what is due to the strain and what is a characteristic of race. A few years ago a writer in the *British Bee Journal* described his Ceylon experiences. He found that his black bees disappeared because they settled on the alighting-board and then ran into the hive. The lizards would crawl on to the board and gobble them up as fast as they settled. He then tried some Italians, which, by flying straight into the hive, escaped annihilation.

Inspection of my own apiary showed that some of the "blacks" alight on the board and run in, but that others fly straight into the hive. As I have no black bees whose pedigree is devoid of suspicion, the observations are worthless. The characteristic may survive in some of my bees as an inheritance from a remote Italian progenitor. Such a protection against lizards may be an absolute necessity in Italy. In England it is not required.

On theoretical grounds one would imagine that the Italians were more highly educated in dealings with the wax-moth. In cold districts many of the wax-moth pupæ are killed during the winter, and the survivors are able to produce only a couple of generations before winter again arrives. In warmer climates the weather does not help the bee, and it is obvious that the resisting power of the bee must be increased accordingly.

In all arguments, however, it seems to be assumed that color itself is absolutely valueless. I am inclined to look upon it as possibly an adaptation to environment upon which further evidence is required.

The native habitat of the yellow bee is warm open country where the wild swarms take refuge in clefts of the rock, etc. The black bees are normally inhabitants of cold regions or of densely wooded forests and jungle.

Mr. F. W. L. Sladen, in writing of the honey-bees of India, gives several instances of light and dark varieties of the native

bees which show that the coloration is correlated to climate.

In the Klasia Hills a dark variety of *Apis dorsata* occurs. It is known as *Apiszonata*. *Apis florea* is represented by a black variety in the valleys of the Eastern Himalayas. *Apis Indica* is a golden-yellow bee whose place is taken in the hill country by a larger and black bee "which possibly is a variety of it. This black bee occurs throughout the Himalayas to a considerable elevation, and can evidently stand a good deal of cold."

I do not think that this alteration of color with altitude can be quite meaningless. It would be interesting to know if the supporters of the black bee in America are located entirely in the colder districts, and if Italians that escape to the woods are able to make headway like the black bees. If each race is at its best under a different set of conditions we shall learn very little as to the value of Italian bees in California from the experiences of a bee-keeper located just outside the Arctic circle.

Albury, Herts, England.

THE SUMMER MEETING OF THE NEW JERSEY BEE-KEEPERS' ASSOCIATION.

Foul-brood Laws Criticised; the New Jersey Association Joins the National in a Body.

BY ALBERT G. HANN, SEC.

The annual meeting of the New Jersey Bee-keepers' Association was held at Mr. Charles Howell's apiary, Hackettstown, N. J., June 29, 1910. The meeting was called to order by Pres. Cook, who made a brief opening address in which he expressed his appreciation of the fine day and place for the meeting, and particularly for the hearty welcome given the State Association by the bee-keepers of Hackettstown, and by Mr. Howell in particular.

A short business session was held, in which the minutes of the last annual meeting were read and approved. How to get in closer relation with the State Board of Agriculture was discussed.

Dr. John B. Smith, State Entomologist, gave an address, "Foul-brood-inspection Laws." He criticised all the foul-brood laws of all the States. He said they give too much power to the inspector, and that none of them contain any right of appeal from the decision of the inspector. He criticised the recent bill passed by the New Jersey legislature in this respect. He said if it got into the courts, as it surely would, it would certainly be declared unconstitutional, and would have to be re-enacted, containing such provisions. Dr. Smith also made a few remarks on how to facilitate closer relations between our association and the State Board of Agriculture.

A committee of four was appointed by the chair to facilitate closer relations with the State Board of Agriculture. Wm. A. Selser,

Harold Hornor, Wm. E. Housel, Albert G. Hann, are the committee.

The Governor's veto message to the recent foul-brood law was read. His specific objections were against making the offense a misdemeanor by refusing or neglecting to treat foul-broody colonies. He thought the offense too slight to be a misdemeanor.

Mr. Harold Hornor gave a talk on his method of producing extracted honey. He uses the eight-frame hive exclusively—two bodies as brood-chambers—previous to the flow. He requeens all his colonies annually. He confines the queen to the lower brood-chamber by an excluder after the flow is well advanced.

In the afternoon Mr. F. J. Root, advertising manager of the *American Grocer*, New York, gave a talk on advertising honey. Mr. Root's talk was a good one, and was practically the same as appeared in GLEANINGS July 1, page 410. Turn back to it and read it again.

A short paper by E. S. Carr was read, "Shall the New Jersey Bee-keepers' Association Join the National Bee-keepers' Association?" He favored the move, first, because of the measure of protection it affords the bee-keeper in his legal rights; the saving to the bee-keeper of the extra dues by joining separately; the literature each member of the National receives. The paper was followed by some discussions; and then a rising vote was taken. The motion to join the National was carried unanimously. The dues were raised to \$1.00; fifty cents goes to the State association, and fifty to the National. Every member who now joins the State association joins the National.

We should like to urge every reader of GLEANINGS in New Jersey to send us \$1.00 and join the State Association and the National. Every one who does so before October will receive the following: The 1909 National Report; membership button; Legal Rights (pamphlet); Bulletin No. 15; price list; postal receipt with seal label "member."

The next was a talk on "Comb Honey," by Ralph Fisher. He lays particular stress on selecting and breeding queens. He is also particularly careful in trapping all undesirable drones. But he has a particularly good method of managing swarms. When a swarm issues he hives it in a ten-frame L. body and sets it beside the parent colony. In four or five days he adds another super to the parent colony; puts over this a Foster bee-escape, and allows the bees all to go down in the parent colony. In two days he removes the top brood-chamber with the queen and a few bees, and unites it to a weak colony. This method keeps all the field workers together.

The last was a paper by Edward Diener, "Bee-keeping in the City." Mr. D. gave a rather humorous but interesting talk on the trials of city bee-keeping. The most serious trouble is in the spring when bees take their cleansing flight. But bees can be kept successfully and profitably in the city.

At 3:30 P.M. the meeting adjourned, subject to the call of the Executive Committee. Pittstown, N. J.

DEATH OF A. J. KING.

Former Editor of the *Bee-keepers' Magazine*, Author of "*Bee-keepers' Text-book*," etc.

BY W. A. PRYAL.

Our good old friend, A. J. King, is dead. He died at his home in San Diego, as you have probably learned, June 24, of valvular heart disease. I presume it was really a general breaking-down of his system from the infirmities of age, in his 75th year, that carried him off, as I had heard from him some little time before he died that he had a stroke of paralysis. I first came to know Mr. King at the close of the spring of 1866. About the first of July of that year he opened our new district school in this neighborhood. He left here some time in 1868, and never revisited this part of California, though he was on his way here two years ago when he received word to hasten home, as his daughter had died suddenly. It was one of my cherished wishes to visit San Diego this year, and to have again the pleasure of seeing the schoolmaster of my boyhood days. Just think! both are now gone, and I trust they are in a far better world.

I look upon those notices I had given of Mr. King in *GLEANINGS* and the *American Bee Journal* as the best services I ever rendered a friend. I am sure the venerable bee-keeper's closing days must have been made brighter by having some of the bee-papers that were cotemporaries of his in the olden days give place to appreciative notices of his labors in the bee-domain, so to speak. Few indeed are the pioneers of American apiculture that are left. It seems to me that some one should write an unbiased history of those pioneer times. It would be history that American bee-keepers a quarter of a century from now would delight to look back upon. There will then be no one to tell of those pioneer times, except, perhaps, in a traditional sort of way.

Oakland, Cal.

[On page 705 of our issue for Nov. 15, 1909, will be found a life-sketch of Mr. Albert J. King. I had much correspondence and quite a little deal with both the brothers, A. J. and H. A. King. From the account above referred to, it seems the *Bee-keepers' Magazine* and *GLEANINGS* were started about the same time; and although we were rival editors for quite a number of years I am glad to state that friendly relations always existed between the two journals. After A. J. King went to Arizona it was my pleasure to make him a visit out in the desert; and while I was in Cuba I visited a large apiary that was for some years managed by Mr. A. J. King. He was, during all his life, connected more or less with bee culture and bee literature. As friend Pryal

has suggested, it must have been a pleasure for him to see two of the bee journals of America recognize and make mention, not long before his death, of what he had done to give modern apiculture the place it now occupies.—A. I. R.]

A MOST REMARKABLE INCIDENT OF SWARMS ENTERING EMPTY HIVES.

BY CALVIN S. HUNTER.

One of your correspondents speaks of a swarm of bees that moved over to a better hive. This encourages me to give a little of my experience that was entirely new to me, although I have handled bees for over fifty years, part of the time under the care of Rev. Mr. Langstroth when he was introducing his movable frame. Last fall I had five nice swarms in good hives; but, as was the case with nearly all the bees in our neighborhood, they all died. One man with 35 swarms did save four of them; but I could not buy of him, so I thought I would rest awhile and take a new start later. So this spring the dead bees were carefully swept out, and the hives set to one side. The lot was planted to potatoes, one row within two feet of the front of the empty hives. It seemed strange to run the plow against the front of a spot that had been sacred beeground so long; but I did not set the hives away, thinking a swarm might come along and I would be like the boy that was not ready when it rained mush and milk.

The potatoes were laid by, and the very sight of a lone bee would have been a curiosity when my wife heard the sound of a swarm in our dooryard. As soon as I got home I went straight to look after the empty hives, and found the bees had taken possession of the first cap. I thought this a happy incident, and tried to persuade myself I had heard of the like before. Next day I went to look after them, and found another large swarm occupying the second hive. Well, I thought this a mere coincidence; but I asked our folks what kind of people usually had good luck.

Next day I looked after the two and found a third swarm in the third box. When I told my wife of this you should have seen how she looked at me. She was either anxious as to my sanity or else she wanted to see if I had the countenance that George Washington is supposed to have had when he was testifying as star witness in the famous cherry-tree case. But truth is mighty; and, any way, she had to stand back from the third swarm of bees.

The fourth day I drew a blank; but the fifth day the fourth swarm took possession of the fourth hive, all running the business themselves, and I just "let 'm." I was like the Irishman riding a frisky mule. When the mule got his foot in one stirrup he climbed down, saying, "Well, if you are going to ride I'll just walk." These were all Langstroth hives, with one super each left on

last fall, for not one pound of honey was taken from the five stands, and a little poor honey-dew was all the summer afforded. Come and see; or if any of your friends can duplicate this performance I should like to correspond with them.

Seven Mile, Ohio.

[If our correspondent were not the celebrated "corn-man" we should most certainly doubt his veracity. The case is indeed remarkable, and we believe Mr. Hunter holds the record.—ED.]

SELLING HONEY IN CITY MARKETS.

Stalls in Market Places Preferable to Grocery Stores.

BY ELMER J. WEAVER.

There have recently been several articles on the subject of marketing honey, each of which has been of value, since the experience of many in different sections of the country, describing methods of selling at good prices in local markets without shipping to large centers, is a great help toward holding the market firm. Honey is not considered a necessity by the majority of citizens, like vegetables, etc.; but it is from the vegetable-market standpoint that I wish to treat the subject.

My chief occupation is growing carnations for cut flowers during winter. During the spring, each season, a large lot of tomato-plants are set out among the carnations. These ripen four to six weeks earlier than outdoors in this section. The marketing of tomatoes in Lancaster, a city of about 50,000, at a price ranging from eight to fourteen cents per pound, in competition with tomatoes from Florida and Mississippi, has given me a good opportunity to study the markets, as it requires a wide distribution to hold these prices and dispose of a ton or more each week. Being very much interested in bees and bee-keeping I have been watching the marketing of honey also. Nearly all the vegetables sold in Lancaster are produced by farmers and truck-gardeners living within hauling distance of the city, the produce being taken to the various markets, of which there are six. Stalls are rented all winter to each farmer, who sells his produce direct to the customer. These same conditions probably prevail in many cities of the United States. Instead of making an effort to retail my tomato crop, which requires a low price to dispose of any quantity at one or two markets, I distribute them among eighteen to twenty stall-holders in the various markets, and also among the best grocers in the city. In this manner I can realize the price mentioned above, and the retailer easily makes a good commission. I find that the grocers in Lancaster sell very little honey. The leading one usually has honey in the store; but a customer has to inquire for it in order to know whether there

is any in stock. On several occasions I have asked him how honey sells, and he has replied that good extracted honey sells fairly well in jelly-glasses, though not so readily in special honey-jars, as the outlay is less, for one reason, and then the jelly-glasses can be used for a variety of purposes. At this store a limited amount of comb honey is sold, though it is rarely displayed in an attractive manner.

I consider the market the best place to dispose of honey, there being several parties that I know who sell quite a quantity at good prices. To one of these I have sold extracted honey at 10 cts. a pound in lard-cans, and he furnished the cans. He sells the honey almost exclusively in jelly-glasses, as his customers prefer it that way. This same man sells over a ton of comb honey each season at 20 cts., the price of extracted being usually 12 cts. a glass, the same as the tomatoes mentioned above. The stall-holder in the market has more chance to display honey conspicuously than the ordinary grocer has, as the variety of goods offered for sale is infinitely less than in the grocery.

Customers going to the grocery store usually have a list of goods that they want; and unless they are regular consumers of honey they never think of buying any, as the grocer usually has a lot of new goods to offer when the regular list is purchased. When going to a grocery store myself I have never known a clerk to make an effort to sell me honey. Then many of the best customers do not go to the store themselves, but use the telephone almost exclusively. These same people, on the other hand, go to markets several times weekly, and usually have their special stands to which they go for butter, eggs, vegetables, etc. If honey were displayed attractively, and the salesman, having but a few different kinds of goods to sell, used a little pressure, he could build up a good trade, as evidenced by the one man mentioned above, who realizes 20 cts. a pound for comb honey.

It may take some time for a bee-keeper to build up a trade in this manner; but I think that, with perseverance, a fine business could eventually be established if the goods are attractive. The majority of salesmen in the markets are glad to sell any thing on which they can make a fair commission. I have found that extracted honey sells readily also in pint and quart Mason jars, at 45 to 50 cts. a quart, about 4 cts. being allowed for the empty jar if the purchaser cares to return it.

A small proportion of farmers around the country here keep bees, mainly in box hives, and produce some dirty-looking crooked honey in $4\frac{1}{4}$ square sections without separators or starters. Yet in spite of the appearance they market it at about 20 cts. a pound. Grocers could not sell the same apology for honey for half the price. This only shows what can be done by bringing honey, even if of a very inferior quality, to the direct attention of the consumer.

The same salesman in the market could

hand out literature showing the desirability of honey as a food, with a surer chance of such literature being read than could the grocer, as any circular from a store would be looked upon only as another advertising circular, and be destroyed without being read.

Ronk, Pa.

WHEN IS HONEY RIPE ?

The Number of Extracting-combs per Colony ;
a Discussion of Some of Mr. Alexander's
Plans.

BY F. B. CAVANAGH.

In the comparison between the Alexander and the Lathrop system, page 484, some important points were overlooked—first, of what a “set” of combs consists. Both parties use the ten-frame L. hive, I believe. Mr. Alexander, however, used ten combs to the super; Lathrop only eight, I suspect. Now, when it comes to ripening honey it is a very simple matter to figure out a difference of one-fourth more comb surface per super in a ten-comb super than in an eight-comb super of equal width. Also the cells are nearly one-fifth deeper in the eight-comb super than in the ten-comb. Of course, the honey will ripen quicker; but there are still other things which I have observed from experience. With reference to *specific gravity* of honey, let me call attention to the fact that *specific gravity* and *ripeness* are two different qualities. The former refers to its thickness, density, or, technically, the amount of water a given quantity will displace. Ripeness is the change (chemical or organic, I know not what to call it) that takes place when honey has been stored in a warm place.

Now, honey may be *thickened* on the hive in one week, but *not ripened*. Alexander tells us that he doesn't throw thin honey out, and I believe him, because I know what a great difference there is in locality. Possibly Alexander's bees fly so many miles that they in some manner get rid of the surplus water *en route* to the hives.

Now as to locality, I have seen honey in Wisconsin, not far from Mr. Lathrop's location, which would extract thick and heavy with practically no capping. Again, I have seen it in another State where the *capped* honey was not thick, and had to be thickened more perfectly after extracting.

Now, lest I get myself into too deep water, perhaps I should qualify here by saying that thick honey, too newly gathered to be ripe, will ripen perfectly in *sealed* containers in a warm temperature. Thin honey, I do not believe, will ripen much until the water is removed. I used to think the dry atmosphere caused a difference in thickness of honey on hives, but have seen both the cases referred to above occur during a protracted drouth. It must be some other cause.

Now, the season of the year for clover

finds the bees in a different mood from that of buckwheat bloom. In June the hive is full of brood, feverishly expanding, and naturally in a swarming mood. The conditions in a rush of thin clover nectar are different from that of a slower flow of buckwheat. Bees curtail their brood-rearing, contract the cluster, and think less of swarming as autumn approaches.

Let me sum up the variance between the conditions making the super plan feasible or not. Ten combs of about 1 $\frac{1}{10}$ -inch thickness, and a total of $\frac{1}{4}$ more comb surface; a tendency of the bees to quiet down late in the season; thick nectar as gathered; proper facilities for keeping a high temperature for ripening by the use of dark-painted metal houses and open tanks. Conditions where two or more supers must be used: eight combs of about 1 $\frac{1}{2}$ -inch thickness in each super, and less comb surface with deeper cells; thin nectar coming with a rush; bees with much brood and swarming inclination; no ripening facilities. Now let me add one more big one, and that is the difference between getting rid of an excess of flavor or aroma which will later be baked out any way, and of letting the clover aroma escape. Why, I wouldn't think of putting clover honey into a tank to sweat out all its fine flavor; but a baker's grade of buckwheat is bound to be aromatic enough any way. Giving due weight to the difference in conditions, put it on record that methods for producing buckwheat baker's honey will not give a choice clover table honey.

Now, about requeening, for it was the last item which prompted this reply. I must say that it was “never this way before,” when I ran bees in Michigan and Wisconsin; but here, with our light clover flows and heavy fall flow, our colonies simply will not requeen themselves. Queens live on until almost gray-headed, and the colony dwindles. If superseding occurs at all it is liable to be in a dearth of honey, and result is poor queens. Requeen themselves? Not here. I grafted several hundred cells in June, and am taking care of this matter carefully. We also clip queens, and almost invariably find them living on past their usefulness, if not molested. Location makes the difference.

Hebron, Ind., Aug. 4.

Queen Piped when Bees were Taken Away.

Some time ago I had a natural swarm from a colony with a clipped queen that was about one year old. The swarm returned, and so I shook the swarm but failed to find the queen. I removed all the brood to a new location with some adhering bees, and, as I found afterward, the laying queen. I examined this brood shortly afterward; and as I opened the hive I distinctly heard the queen piping. I lifted one frame of brood and caught her in the act of piping with trembling wings. I looked closely, and she did it again until I placed her with the shaken swarm on the old stand. Then she stopped.

Cabot, Pa.

W. F. EBERT.

[It is possible that the piping of the queen was due to changed conditions; but we have our doubts about it. It would be our opinion that it is due to some other cause.—Ed.]

Heads of Grain

from Different Fields

Preparing Early for Winter.

The first week in September we take off all of the supers not previously removed from the hives, and allow the bees to store what honey they can from then until winter in the brood-combs. About the first of October we open and inspect every hive—first, to see the queen; second, the number of bees; third, the condition of the brood; fourth and most important, the amount of stores, which we estimate by lifting the frames one at a time, and judging, by holding them, how much honey they contain. In our locality a good-sized colony should have between 35 to 40 lbs. of stores, while a smaller colony requires from 25 to 30 lbs. Last fall I had a number of colonies that had over 50 lbs. of honey. Should a colony not have enough, and some other colony have too much, we equalize; and if we have no frames of honey to give we feed sugar syrup till we judge they have enough to winter.

About November first we put the colonies into winter quarters. We have all of the hives in two bee-sheds, a picture of which was in GLEANINGS for Dec. 1, 1909. These are boarded tight on three sides with the long open side facing the sun. In these sheds the hives remain, winter and summer.

Most of the colonies are in chaff hives, and from these we simply pry off the cover, put on an empty super, lay three sticks on the frames crosswise, and over these three another stick lengthwise. Then we put on a sheet of enamel cloth or table oilcloth, and over this a chaff cushion, and finally the cover.

The part that we wish to emphasize is about sealed covers. At first we always put the cover on tight, the result being that the cushions were wet, the frames and honey moldy, and a rank smell in the hives. We soon overcame that difficulty; and now after the cushion is on we lay several strips of broken section on the super and put the cover on them. This leaves an opening about $\frac{1}{2}$ inch all around the top. Our hives and cushions are now dry, and the frames are no longer moldy. We formerly contracted the entrance; but by experience we found that the bees wintered better with the entrance not contracted.

We winter some colonies also in single-walled hives. Over these we put a rough box or outer case, and pack the space between with old newspapers. We like much better a telescoping winter cover that goes over the outer hive, leaving a dead-air space between the inner and outer hive.

Stettersville, Pa.

GEORGE REX, JR.

A few Questions on the Selection of a Motor Cycle for Bee-keepers' Use.

I have read with much interest your articles on autos and motor cycles. I operate five bee-yards from five to fifteen miles from home. Thus you see my interest. In your motor-cycle article I wish you had discussed the magneto type versus battery, and also the free-engine clutch, their merits and demerits. All the motor cycles I have had any thing to do with so far are very hard to start, and the equipment that overcomes this as much as possible is the kind I want. Also please give factory address of Harley-Davidson and Yale machines.

Wolfe City, Texas, Aug. 11.

V. GREEN.

[We would not advise you to use a magneto on a motor bicycle. It adds considerably to the expense and to the complication. The amount of current which a motor cycle uses is very limited, and you will find three cells of a common battery quite sufficient to run you for two or three months. Of course, if you use the machine constantly you may have to renew the batteries oftener. You can usually buy dry cells at retail at 20 cents apiece.]

Neither would we advise you to get a two or four cylinder machine. They add greatly to the weight, and have no advantage over the single cylinder except that they will permit of a little faster speed. The single-cylinder motor cycles are heavy enough with a simple battery equipment; and to add cylinders or a magneto, or both, only adds to the weight and to the difficulty of starting. In the line of a clutch we could not advise any thing better

than a belt-tightener of the Harley-Davidson or the Yale type, and by all means get a belt-driven machine. Do not let any agent talk you into buying a chain-driven outfit. Except for racing purposes the chains are going out. A belt-tightener outfit will give you all the advantages of a clutch system. In other words, you can loosen the belt and let the engine run free if necessary. This is an advantage when one is carrying mail in rural-delivery routes and in making frequent stops. All he has to do is to throw the lever, loosen the belt, throw on the brake and stop the machine, letting the engine run; deposit his mail, gradually tighten the belt, and start off again.

You will find the Harley-Davidson a little higher-priced, but enough better than the Yale to compensate for the difference, although the Yale is a much better machine in heavy sand or in excessively hilly country. The Yale is a lighter machine, but can not be run as slowly on a level as the Harley-Davidson, nor is it quite as easy riding.

The Harley-Davidson is made by the Harley-Davidson Motor Co., Milwaukee, Wis., and the Yale by the Consolidated Mfg. Co., Toledo, Ohio.—Ed.]

Hydrogen Peroxide for Stings.

Have you ever tried hydrogen peroxide for bee-stings? I have been using it for some time, and I must say I am more than delighted with its effect on them. The way we came to use it was this: Our two-year old one day got a sting on the end of his thumb, which, of course, made him cry. My wife, anxious to do something for him, poured some of the solution into a cup and put the thumb into it, and, to our surprise, he almost immediately stopped crying. A few days after, a neighbor's boy who was playing around the hives got stung, and my wife applied it again, with similar results. In the mean time I remained skeptical, but have tried it since on myself quite frequently, and find it relieves the pain wonderfully, and there is but little or no swelling if it is used soon enough.

Stratford, Ont., July 11.

E. H. EIDT.

[Despite the testimony of you and the children, we would doubt very much whether hydrogen peroxide would have any more effect than so much water. As one of our local physicians says, it is about as near water as any thing there is found in *materia medica*. It is only very slightly acid, while the sting of a bee is violently acid. If hydrogen peroxide were an alkali, it is conceivable that a liberal application of it might neutralize the acid of the sting. Its chief value lies in the fact that it is a germicide, and therefore valuable for preventing infection, etc.]

The only thing that will relieve a bee-sting is an application of either hot or cold water. Cooling applications of any thing will bring relief; and as hydrogen peroxide is nearly water it could hardly have more than the effect of so much water.—Ed.]

A Colony that Persisted in Killing Queens.

I have kept bees from boyhood, nearly all of the time; but I have run up against something that beats me, and I should like to have you or some reader explain why this particular colony should be so stubborn in the way of accepting a queen. To commence with, I gave this colony a queen that I had sent away for. As soon as they liberated her they balled and killed her. I then introduced another, which shared the same fate. Then I gave them a frame of brood. They raised a queen, and as soon as she hatched I found her balled, and, later, dead. Then I tried ripe queen-cells at two different times. Both these queens met the same fate. There was not an egg in their combs, so no chance for fertile workers. They stored their combs full of honey and pollen. I have at this writing broken up the colony, dividing the frames and adhering bees, giving them to several other colonies in the bee-yard.

Bakersfield, Cal., July 27.

E. L. DICKINSON.

[Once in a great while we find a colony that has a mania for killing queens. We had one such that would kill every queen we attempted to introduce to it by all the different methods described in the various bee books. We gave them cells, but the bees destroyed them. They would kill the freshly hatched virgins. We gave them a frame of freshly laid eggs from which they raised a cell or two, and finally a queen; then when she was about ready for

business they killed her. The only thing to do with such colonies is to brimstone them, or better, perhaps, do as you did—scatter the bees among a dozen other colonies. But even this would be questionable policy, as a few of the adopted bees might kill a valuable queen.—ED.]

Bees Used for Fertilizing Alfalfa in Wyoming.

The readers of your paper who have been reading my advertisement for some time regarding the Big Horn Basin of Wyoming will be interested in learning a new use that has been found for the busy bee out in this new valley where so much alfalfa is being grown. Farmers in that locality found, some few years ago, that alfalfa grown for seed did not do well, and the authorities of the State University accounted for it by the fact of there being a lack of wind to mix the pollen properly, and suggested that bees be used for this purpose as well as for making honey.

The Big Horn Basin Valley, which is larger than the State of Massachusetts, being at an altitude of from 3600 to 4500 feet above sea-level, and surrounded by mountains from 7000 to 13,000 feet high, is so located that the wind does not blow very much at any time of the year, and this is especially true during the growing season. Farmers in that locality became interested in bees, and at this time there are thousands of hives that send out their busy workers every day that not only are used to gather honey, but are also used to mix the pollen of the alfalfa, and thereby greatly improve the quantity and quality of the alfalfa seed.

Omaha, Neb., Aug. 11.

D. CLEM DEAYER.

Sweet Clover, etc.

On page 496 I note what Bro. Ed Van Sickle has to say about sweet clover, and what he seems to call a pest, as many others have done, who, like him, have not studied it, but have taken up the pest cry to respond to some one else; but I am glad that our farmers are getting awake to the value of sweet clover as a fertilizer; and now in this section we do not have to fight for it as we once did.

I have talked sweet clover to our farmers at their institutes when it was almost worth a man's reputation to mention the subject publicly; and I want some more of the booklets on sweet clover.

I also note the story, as he gives it, of the old Methodist preacher. Well, it chanced to be my good fortune to know Father Salisbury; and while he was one of the pioneer men to spread the gospel of Christ, he was also a pioneer in spreading beeology. I have known him to have as many as 200 colonies when this was a country for commercial bee-keeping. I have known him to have several acres of sweet clover for his bees. He was also the first man in our section to import a queen from Italy, paying \$10.00 for her, and getting her safely through her long journey. He was successful in introducing her to get a start of Italians. Father Salisbury has long since passed to his reward, and sweet clover still prospers, whether he was the culprit, so termed, or not.

In this locality, twenty miles from his old home, a good "Brother Everitt" was the one earlier to receive all the censure for sowing sweet clover; and as my wife and I are on our pilgrimages to and over the land, and see sweet clover growing, I often say to her, "Brother Everitt has been here." I trust the time is not far distant when all our people will wake up to the value of the plant; then we shall have better forage for our bees.

The honey crop is good here this season, and stocks have increased well. Grain farming has turned us away from being a commercial bee-keeping section as in earlier years.

Philo, Ill., Aug. 3.

M. L. BREWER.

[But, friend B., we did not infer that Mr. Van Sickle meant to speak of sweet clover *now* as a pest. He simply referred to the time when he labored under that impression. He speaks as a new convert to a new piece of information. Opposition to sweet clover has now practically ceased, and it is fast coming to be recognized as one of the greatest blessings that have come to the farmer for many a year.—ED.]

Yellow Sweet Clover.

I have been experimenting with yellow sweet clover for the last two years, and find it second only to alfalfa. Stock of all kinds like it—hogs, chickens,

and cows. My sweet clover in my young orchard commenced to bloom the last week in April, and bloomed till the 10th of July. It was just in front of my apiary, and it was covered with bees all day long. I think I have 1000 lbs. of sweet clover from 25 hives. It is as white as white-clover honey, and I get 20 cts. per lb. for it in Concordia. I had a swarm that came off the 17th of May. The hive weighed 40 lbs. when I out them in, and now it weighs 95. I think that does pretty well for a new swarm.

I cut my sweet clover for seed the last of July, and will thrash it with a clover-huller before long. I intend sowing several acres for pasture this fall. I think the yellow variety is better than the white, as it does not grow so rank, and stock like it better. There is no danger of bloat when mixed with alfalfa. For pasture it is easier to grow than alfalfa. In missed places in my alfalfa I sowed sweet clover, and it did finely. It has to be sown in the fall if we expect it to bloom the following season.

Concordia, Kan., Aug. 8.

J. W. WILSON.

Sweet Clover Finally Appreciated by Agricultural Men.

I inclose a clipping taken from *The American Sheep-breeder and Wool-grower* for June, 1910, which I understand has a large circulation among sheepmen. Its interest to bee-men lies in the fact that it shows how other industries are waking up to the value of sweet clover.

Lovelock, Nev., July 14.

C. C. LARSON.

Sweet clover, that traditional pest of field and roadside, is finding friends at court. As a fertilizer, inoculator of soils, aid in the culture of alfalfa, a proven forage for stock, and an excellent and profitable hay crop when properly cured, the old, tough, one-time valueless sweet clover is being sown and cultivated with great care in all parts of the country.

An Above-ground Building v. a Cellar.

Is a good tight building all right for bees in winter, or is a cellar better? Which is preferable to use for a cellar—cement or rock?

Harper's Ferry, Ia.

E. M. PHIPPS.

[A building above ground is usually not a good place for confined bees in the winter, for the reason that it is difficult to control the temperature of such a building. As you probably know, the temperature should be as uniform as possible, not varying much from 45° Fahr. An above-ground cellar is hardly to be recommended, then, on this account.

For an underground cellar we do not know that there would be any choice between rock and concrete. We would use whichever is the cheaper. If there is stone right there, you might find it cheaper to use that material; but if not, you would very likely find that the concrete would be cheaper.—ED.]

Moths do Not Molest Strong Black Colonies.

Since the merits of the common or black bees are being discussed I wish to say a few words in their defense. I have bought Italian queens from the most noted queen-breeders in America, but have never found them equal to my blacks. My blacks winter well, build up quickly in the spring, and store far more honey than any Italians I have ever had. They seldom swarm; but when they do, such swarms! I have not lost a colony from moths for seven years; in fact, I never lost any from such cause except neglected queenless colonies. I have not had a winter loss now for two years. My bees get the nectar when there is any to get. I am sorry that I ever introduced Italians into my apiary, and do not expect to buy any more. Diseases of any kind are unknown among my bees.

W. Va., July 25.

J. D. THOMAS.

Another Way to Fill Empty Combs with Syrup.

Allow me to add something to Mr. G. M. Doolittle's article on feeding bees by filling empty combs, p. 341, June 1. I wonder if he ever tried standing the combs on a slant in the tub or boiler and pouring the syrup from a sprinkler on to the comb. I have tried this method with abundant success. The syrup, as it runs down the comb, does not so completely cover the cells, thus preventing the escape of the air, as when the combs are laid flat. I have also had very good success in churning the combs up and down in the syrup a few times, thus filling both sides at once.

Batavia, Ill., June 3.

WM. M. WHITNEY.

Will Bees do Well in a Cave where the Sun Shines on the Hives Only a Part of the Year?

I am starting an outyard seven miles from home in a canyon that has a fair amount of bee pasturage in it—principally sweet clover. I have the bees located in a large cave on the side of the canyon, facing south. The sun does not shine on the hives from about May 1 to Oct. 15, at which time it will strike them in the middle of the day during the remainder of the year. The cave is very dry with the exception of a little seepage or drippings in one end. Do you think bees would do well in such a place? Would they winter well there? The climate is mild in winter. Do you think their being in a cool place would have much effect on their swarming? I use the ten-frame Jumbo hive, and will try for both comb and extracted honey.

Mohler, Wash., Aug. 6.

C. L. SNIDER.

[It is a little difficult to say whether the cave described would be a good place to keep bees or not. We would suggest putting half the bees in the cave and the other half out in the open air and note the results. It is our opinion, based on considerable observation, that you will find that those colonies that have more sunshine will do better than those that are shaded so much.—ED.]

Introducing Cells and Virgins; after Trying Both, the Majority Prefer to Introduce Cells.

I think Mr. Pritchard has the better of the argument with Mr. Bain on the question of giving cells instead of newly hatched virgins to nuclei, no matter whether to single or twin nuclei. After trying both plans in the past twelve or fifteen years I have decided that it is more satisfactory to introduce cells, largely because there is an actual saving of time over the other plan, even when the virgins are kindly received. Just why this should be, I am unable to say; but after reading the editorial on page 336, June 1, I again gave the matter a trial with the usual results—that is, the queens hatched from the cells that were given to nuclei were laying from one to several days—generally two or three—before the virgins were laying that were introduced just after they had hatched. Probably Mr. Pritchard has also found this to be the case.

Holly Hill, Fla.

C. S. HARRIS.

Ventilation at the Top to Prevent Swarming.

I agree with Dr. Miller, page 440, July 15, as to the value of top ventilation. I use eight-frame hives, and run for both comb and extracted honey. For the last three years, during the honey season I have been giving top ventilation by sliding the supers far enough to let the bees pass in and out between each one. I also raise one end of the cover over the upper super. During this time I have had only one swarm out of every thirty hives—a little over three per cent—and there were no queen-cells cut out. I keep one empty super on top during the honey-flow. The bottom entrance is only $\frac{3}{8}$ inch by the width of the hive.

The colonies having plenty of ventilation at the sides and top average one swarm out of thirty, as mentioned above, while those in hives that were closed all except the lower entrance swarmed two or three times each. I use a large shade-board that keeps out all of the rain.

Philadelphia, Mo.

ELMER HICKINS.

Why would Not these Bees Stay Hived?

I have a swarm whose actions I can not understand. I hived the bees in the most approved manner, giving them two frames of brood, and attending to the shading and ventilating of the hive. But they have swarmed out again and again for over a week. I finally placed a queen-excluder under the brood-frames, and now they return of their own accord, but continue to swarm. The queen is not clipped, and so far I have been unable to find her. Why do they act in this way?

Ashtland, Wis., Aug. 6.

J. E. COOKE.

[We occasionally find a colony that has a mania for swarming. The only thing to do in that case is to hive it, then carry the hive (bees and all) down cellar and keep them there for a week till they can cool off—the cellar to be darkened as much as possible in the mean time. Of course, while they are in the cellar they should be given a frame or two of honey.—ED.]

Are Snakes Immune to Bee-stings?

Garter snakes are enemies, we know. Are they immune to bee-stings? I have seen them scramble out of a hive with twenty or more bees trying to sting them, but none seemed to succeed in lodging its weapon.

Montpelier, O., July 21.

G. W. JOICE.

[Some years ago, noticing some snakes crawling out of a hive we picked one of them up on the end of a stick and repeatedly dumped it in front of the infuriated bees. While they made desperate attempts to insert their stings, the snake seemed to be entirely unharmed. We then killed the snake, but could not find the slightest trace of stings on its body. It is possible there are some snakes with a skin soft enough so the stings would penetrate them. We are of the opinion that garter snakes, at least, can not be harmed by bees.—ED.]

When to Remove Finished Comb-honey Supers.

On some of my hives there are from two to four comb-honey supers. Is it proper to keep on building up as soon as the sections are full?

Millerton, N. Y., Aug. 9.

H. J. PFAHL.

[If you were producing extracted honey we would advise you to keep on stacking up the supers, allowing the honey to remain on the hive as long as possible; but with comb-honey production it is a little different; for if the honey remains on the hive long after it is finished, the bees traveling over the surface of the comb give it a dauby brown look, and it is then called "travel-stained." Usually, the sooner the finished sections can be removed, the better.—ED.]

Sweet Clover—Didn't Need Teaching.

I have a small piece of sweet clover, and it surely is a great plant for the bees to work on. I have a mare which I did not need to teach to eat sweet clover. I just simply put it in her manger, and she ate it as readily as any other clover.

H. C. EAKINS.

Colman, Michigan, August 8, 1910.

[Friend E., your report is right in line with others we are receiving almost daily. We hope all of our readers who have had any experience in feeding sweet clover to horses and cattle will report.—ED.]

Shooting Down a Swarm.

Miss Amy Machold, an eleven-year-old girl, in the absence of the men-folks found a swarm in the top of a cottonwood-tree; and, being unable otherwise to get them, took her brother's rifle and shot them down and afterward hived them.

We observed Italian bees working on red clover in preference to lucerne and white clover. Is this unusual?

Blackfoot, Idaho.

WILLIAM MACHOLD.

[Yes, if the lucerne and white clover were yielding nectar; but the probabilities are that neither was yielding at the time, and red clover was.—ED.]

Why Were the Young Bees Being Carried Out?

I should like to know why my bees are carrying out so many young bees. They will carry these young bees out bodily, and carry them nearly out of sight sometimes. These young bees, when let go, will fly at once, and sometimes will go nearly to the ground before taking wing.

Crooksville, O., Aug. 8.

E. G. PETTIT.

[We are unable to say why your bees are carrying out young bees, without further particulars. We can only surmise that the brood from which they were reared was overheated at some time, and that these same young bees are in some way defective. Usually such bees can not fly. It is possible that the young bees in question were able to use their wings to some extent, even though they were defective. You may put it down as a rule that the regular workers of a colony will not tolerate any bees in a hive that are not structurally perfect in every way; and under the circumstances we shall have to assume that there was something wrong with those bees. There is a bare possibility that bee-paralysis may be the cause of the trouble. In that case you would see black shiny bees rather than young-looking fuzzy ones.—ED.]

Our Homes

By A. I. Root

I am come that they might have life, and that they might have it more abundantly.—JOHN 10:10.

Take no thought for your life, what ye shall eat, or what ye shall drink; nor yet for your body, what ye shall put on.—MATT. 6:25.

I shall have to confess that the second one of our texts was for many years perplexing to me. Even when a child it was hard for me to understand why Jesus should tell us to take no thought in regard to what we should eat or drink or what we should put on; but of late I have been coming to understand that he meant we should take no *anxious* thought about our food or apparel. In view of what has been said lately in regard to overeating, we can readily understand how his pure heart was pained to see so many people devoting their lives to the matter of preparing elaborate dishes and great varieties of food; and the same way in regard to raiment. We notice in the daily papers almost constantly accounts of women who have not only hundreds but thousands of dollars invested in fashionable clothing; but when it comes to jewelry and diamonds, if we designate these as articles of *apparel*, the amount of money carried about by *one* woman on her person would feed the starving people in China and other foreign lands for a long time at least.*

Just now much is being said in regard to high prices of the necessities of life; but, oh dear me! people who are earning only moderate wages might live and lay up something for a rainy day if they did not think it incumbent on them to keep up with *style* and modern *customs*. Just now I am rejoicing and happy with a very little rolled oats and milk, as I have told you several times on these pages, and plenty of fruit. Apples are so cheap now that everybody can have them in plenty. Less than a week ago I could not get good apples cheaper than three for a dime; but now we have plenty in our orchard, and I suppose most people can get a *whole peck* of good wholesome apples for a dime instead of only three. And now in regard to raiment or clothing. How much is really needed to preserve health, especially during the summer time? or if you go down to Florida with Mrs. Root and me, how much is really needed the whole year round? I propose to

* Here is what *Everybody's* has to say in regard to "raiment" for women:

In no other country do women spend so much money on their personal adornment as in America. The American woman is clothes-mad; not only does she wear more expensive clothes and jewels than women of other countries, but she wears a far greater variety, and her taste for elaborateness amounts to a craze. Nowhere in the world does one see this same overdressing save among the *declassée* women abroad—at Trouville, Ostend, or some such continental watering-place. Throughout Europe the women of high nobility and social position are like wrens compared with these cockatoos of the half-world. It is an unpleasant thought that it is the latter who set the standard which our fashionable women follow with naive avidity.

discuss the matter directly in this Home paper. Let me digress a little.

Almost forty years ago, shortly after GLEANINGS was started, in some way or other I became acquainted with Professor Cook, then of the Michigan Agricultural College; and after we had corresponded quite a little, and he had sent us some helpful notes for GLEANINGS, as you will discover by looking over our early volumes, I made a trip to Michigan and looked through that, not only one of the first, but one of the very best, of our agricultural colleges and experiment stations. Long will I remember when Professor Cook invited me to his own house, and permitted me to have a glimpse of that model home. There were two children in that home at that time—a bright boy and a girl; and, besides these, the mother, Professor Cook's good wife. If Bert Cook is not at present a great and good man he certainly ought to be, with such a mother as he had. It has been my privilege during this life God has permitted me to live, to meet with many great and good men and women; and may he be praised for it. Mrs. Cook was a model mother. She was educated, bright, and intelligent, well posted, and up to the times, and it was really a beautiful sight to see and hear her talk to those lovely children. They were a *busy* family all around. In order to teach the children language as well as Bible, if I remember right, the morning Bible readings were partly in a different language from theirs; and it was wonderful how those two children took hold, and how the whole household seemed to have caught the spirit of *teaching* and *learning* from my good friend Professor Cook. He was then in his youth, and full of a sort of boyish enthusiasm for his work.* I have before remarked that his peculiar method of teaching has so impressed itself on his many pupils that whenever I have met one of them anywhere I have almost invariably recognized that they were at some time in their lives students under Professor Cook.

After breakfast my good friend took me the rounds among his different classes; and I was not only rejoiced but greatly profited. When we came around at dinner time Mrs. Cook inquired about the different recitations. I was especially interested in a class in physiology; and when she asked her good husband what *line* of talk he gave the pupils in that morning's physiology class, he replied, with a comical look, "Why, my dear wife, I talked to them this morning about *nightgowns*." And, dear friends, that morning talk about nightgowns has followed me (and troubled me) more or less for about *forty years*; and therefore I wish

* Professor Cook, at the time I mentioned, not only loved his work—that of teaching students, but he loved the students themselves, each and every one of them, in fact. I am sure his old pupils will endorse this statement. In his home in California he may be doing *now* the same kind of work; but he is so far away that somehow we here in the East do not feel his touch and enthusiasm as we used to do in olden times.

to announce to you that the subject of *this* Home paper is to be

NIGHTGOWNS.

Professor Cook said in his talk to his students that morning something like this:

"Boys, this matter of health and its preservation is of such vital importance to you that I am sure you will excuse me if I am a little vehement in urging you, if you have not already commenced, to begin, each and every one of you, to remove entirely, when you go to rest, all the clothing you have worn during the day; then before you retire, or after you get up in the morning, take some sort of bath every day of your life. If you can not do any better, take a sponge bath; or if you have not a sponge handy, dip your hands in a basin of water and then pass them all over the body. Then take a rough towel and rub every portion of the skin on your body—not only to remove the water and moisture, but in order to get up a circulation, and keep the skin in a healthy and vigorous state. After having thus cleansed the entire surface, and induced a brisk circulation, put on your nightgown. You may think this is too much trouble, and that you have not time; but if you will take my advice, in after-years you will certainly thank me, even if you do not do it now while you are young."

I felt impressed with this talk at the time, and mentally resolved that I would follow his advice; but I must confess to you with shame that it was not till I was *seventy years old* that I took the trouble to get a nightgown and follow Terry and a host of others who have advocated daily cold-water baths. Let me digress once more briefly.

More than sixty years ago, when I was a feeble and puny child whom hardly any one expected to live, a lecturer on physiology came along who taught some very important truths; and my father and mother finally consulted him in regard to my health. Among other things he said I must have a daily bath; and after the bath I should walk at least half a mile and back before breakfast. As we were poor people at that time, and bath-tubs and modern conveniences were hardly yet invented, I simply had a basin of water and a towel in my little unwarmed bedroom. The professor said that, after I got used to it, I could take my bath in a room where it was freezing cold, even if I had to break the ice in the wash-basin and bathe; and I found it true. I commenced in the fall; and as the weather grew colder I not only found nothing particularly disagreeable, but I rather enjoyed rubbing my thin anatomy all over with ice-cold water—at least the water was that cold when I dipped my hands in it; but I suppose they may have warmed it somewhat. As our family cow was pastured about half a mile away I had a good reason for my morning walk. In a very few weeks the benefits of a bath and a morning walk became apparent. I quickened up and began to act more like other boys. I can not tell now how long I kept

up that daily sponge bath. I fear it was dropped when the weather became very cold. A few times since I have taken it up for a limited period in very warm weather; but as it seems necessary for me to wear a starched shirt, collar, and necktie, when going out among people, and with so much on my hands that needs doing, I have always declared I *could not* take so much time for dressing and undressing.

When I was up at the cabin in the woods, in Northern Michigan, where I had a fountain that sent a spray clear up among the tree-tops, I had a daily shower-bath, as it was not a hard task to do so. Besides, I was not crowded every minute of my life with a heap of letters, and books and papers all piled up before me.

I have told you how this big brother of mine convinced me I would feel better to omit cooked suppers, or suppers of any kind except fruit. Well, he also tried to convince me that I ought to take a daily bath, especially in that Florida climate; and about a month ago, or a little more, I got a pair of nightgowns and started to follow Terry, daily bathing and all.

Now, you people who have followed what I am talking about, all your lives, perhaps can skip all of this; and I would not go on with it if I were not convinced there are many others like myself who have not been able to scrape up the energy needed to fall in with God's physical laws. We are told that various pernicious insects breathe through their bodies, and that we can choke them to death with dust or any sort of grease closing the breathing-pores. Well, it just begins to be clear to me that human beings, like insects, breathe through their body as well as through the mouth and nostrils. Our great statesman and president, Abraham Lincoln, used to remove his shoes when writing, so that his feet might breathe. Well, if you have not tried it, you will find, as I do, I am sure, a wonderful benefit in giving your body a fair chance to *breathe* all over as God intended it to do.

Whatever the dear Savior may have meant in what our text says about "food and raiment," I am sure it included plainer and more simple raiment. The nightgown and bathing save the work of the women-folks in the same way that uncooked food saves work. If you are well washed before you put on the night-dress it will keep clean a long time; the same with the sheets and the pillow-cases. Very little washing will be needed, and every thing will wash easily. And, my good friend, do not be in a hurry to remove your nightdress and get on your heavy clothing, especially in warm weather. The body is greatly benefited by a good long air bath. When I got down to Florida a few days ago my brother announced an innovation in the way of health. He said they had not lighted their "Best light" gasoline-lamp at all for weeks. In fact, they did not have any lamp—no coal-oil can, no lamp-wicks, nor any thing of the sort. When it became too dark to see they

went to bed; and when it was light enough to see to go out and feed the chickens, they both got up. Instead of reading several hours by lamplight, and then getting up after the sun was up high in the sky, they just used *daylight* instead of *lamplight*. Now for the greater part of my life I have been reading piles of books and papers by lamplight. Of course, it has occurred to me many times, that, if one can get into the habit of getting up as soon as daylight appears, especially in the summer time, he could do his reading by *God's sunlight* instead of man-made illumination. When you come to think of it, what a ridiculous idea it is to have all of this machinery for *artificial* light when there is no need of it! Now, then, even at the present time, during the middle of August we can see nicely by daylight at four in the morning. In cloudy weather it might be a little later. But we do not have many clouds in August.

Well, one reason why I could not pull off my starched shirt, and collar and necktie, before retiring, was because I read my books and papers until I was "clean used up," just ready to drop on my pillow, as it were. By the way, my good friend, especially if you are approaching or have gone beyond threescore and ten, let me suggest that it is poor policy for you to get "clean used up," especially with brain work. If you are performing physical exercise, I do not think it matters so much. The way I am doing now when it becomes too dark to read is to take my cold-water bath. After that, I put on my nightdress and sit around and visit, but not undertaking to read or do anything that requires mental labor. About eight o'clock I drop to sleep easily; and by four o'clock in the morning I am fully refreshed, and ready to do much more profitable work than the night before in the way of reviewing books and papers.

Lately I have had a revelation. During my past life, when I awoke at night I could not get to sleep again; but with my sponge bath, massage, and no suppers, if I sometimes lie awake half an hour or more I just lie still and feel happy because I am so well.

Father Kneippe, over in Germany, has a celebrated water cure; and among other things he has a fashion of having his patients go out and walk in the wet grass. Well, I have spoiled more shoes by walking in wet grass than in almost any other way. Mrs. Root has often told me that if I would put on rubbers before going out to feed the chickens, etc., my shoes would last very much longer; but I can not stand rubbers, as they make my feet sore. Well, this is what I do now. I jump out of bed when it is daylight, and run downstairs in my nightgown. Then I can go out in the wet grass or anywhere I choose, bareheaded and barefooted. You need not be afraid of shocking the neighbors, for you will not be likely to see anybody out much before six o'clock in *any* neighborhood—at least that is my experience. And, oh what fun it is to feed the chickens, see the posies, pull the

weeds, and tie up the vines, prune the young trees, etc., with nothing but a nightdress on! You do not need any sort of covering for your head until the sun makes it hot; and, by the way, we have been recently told by able teachers that the reason why so many men are bald is because they do not go bareheaded as the women do.

Now just look here: For years and years I have worn a flannel pad across my chest all summer long. Every time I took it off I had a sore throat, etc. Yes, when I started for Florida on the 18th of July, early in the morning, I had on my fur cap and overcoat. Of course, I took them off when the sun was up; but I did not have any use for them at all while in Florida. By the way, in order to get the full benefit of a cold-water bath you ought to have some exercise that will get you into a free perspiration every day of your life—say walking two miles; and if you can take your bath right during the perspiration, I think it is very much better. The machinery inside seems to catch on to what the water is doing outside, and you get a more thorough cleansing. Let me digress a little once more.

I told you about that little pump in the middle of our lawn down in our Florida home. It cost only six or seven dollars all complete, and the water is almost as soft as rainwater. Well, in order to water our seven yards of chickens I bought some second-hand iron pipe at two cents a foot and arranged some little wooden troughs so that each trough ran through three yards. There are three troughs in all. Under the spout of the pump in the dooryard is a large-sized oil-barrel with about a foot of the top sawed off. The iron pipes that water the poultry run into this barrel, and the pipe over the three troughs is adjusted so the water will drop about thirty times a minute. This does not take a very large amount of water in the course of 24 hours. It might drop slower, but in that case it would be apt to clog up. There is no objection to dropping faster except the waste of water. Well, we recently put up a cypress tank or cistern to catch water from the house. In the summer time, when it rains every day, this cistern is running over a great part of the time. Now, to save the labor of pumping daily, we recently connected this cistern with the water-pipes. As the cistern is very much higher than the pump on the lawn, unless the outlet to the barrel were closed the water would all run out of the cistern. Well, this barrel I have described is just large enough for me to sit down in so the water just comes up under my chin; so when I prefer a bath by immersion I just go out after dark, throw my nightgown over my head, and have a massage under water as well as out in the open air.

Do you say you can not stand a cold-water bath? Well, after that tub of water has stood out in the sun all day it is a little warmer, if any thing, than I care for. In fact, when I feel as if I should like the

water a little cooler I just remove the plug from the bottom, and let in the cooler water from the cistern. This, of course, makes the tub overflow. I said "overflow," because the water that comes in from the bottom keeps the contents pure and clean.

Now I have gone over this in detail in order to convince you how simple a matter it is to have at home all the benefits of the up-to-date Turkish bath, where you pay a dollar for a single treatment.

By the way, if you wish to take a nice shower-bath that will not cost you a cent, and which will not take more than a few minutes, with nothing at all to pack up and put away, whenever it rains after dark just throw off your nightgown, go out on the lawn, and give yourself a brisk scrubbing while the raindrops wash every thing away. It does not make any difference how hard it rains, for there is nothing but yourself to get wet. You are like the ducks in the puddle—the harder it rains the more they enjoy themselves. All you need is a dry towel when you get under shelter. Unless you have things fixed expressly for this sort of work you may get sand or grit on your feet as you start to go back to bed; but in our Florida home we have beautiful clean white cement walks running right up to the different porches; and when I want to come in, say after wading in the wet grass, I walk over these cement walks until I get to the door-mat, and then in a twinkling my feet are clean enough, especially after being rubbed with a towel, to step into any bed without soiling the sheets in the least. And this reminds me that Terry speaks of taking his cold-water bath in the open air whenever the weather will permit; and I tell you, friends, a sun bath every few days, if not every day, is almost as important as a water bath. While you are letting the sunshine strike every part of your body, do not forget to pound and rub and exercise every muscle all over your frame. It is God's medicine, as cheap and as free as the air you breathe, and the raindrops I have just been talking about. Some people have been astonished because Terry says, "No soap—just clean water." Well, at present I like a little soap around my face, eyes, and nostrils. May be that in time I can dispense with even that. Now just one more thing.

For years past I have been troubled with dizziness or vertigo when stooping over—say to pick strawberries, pull weeds, etc. Well, now look here. I want your full attention, every one of you. I have just discovered, or think I have, that this vertigo or dizziness is caused by poor circulation induced by a cramping position when one is stooping over; and this stoppage of the circulation is caused principally or entirely by your *clothing* restricting the bending of the body. A man has to pull up the knees of his pants when he stoops over. Now, then, if you were going into your garden to pull weeds or pick berries with nothing on but your nightgown, you could

work easily and comfortably. You see there is nothing in the way to prevent the body assuming any position required. I hope the time will come when custom will permit people, especially elderly people, during hot weather, to wear a nightgown, not only all night but *all day long*. I think very many of you are perhaps already sleeping outdoors. Mrs. Root and I are just discussing an outdoor bedroom. Huber, as I have told you, has a bed on wheels that he pushes outdoors nights, and trundles back during the day. While at Agua Caliente hot springs in Arizona, I told you about sleeping outdoors when the thermometer was 112, even after dark, with nothing but the twinkling stars for a covering; and Huber declares that no roof is wanted in an outdoor sleeping-apartment. You can have a movable awning if you choose; but when the weather permits, even this should be thrown back out of the way so you will be right under the stars.

Now, dear friends, if this Home paper is not going back to the ways and customs of the times when God first put us on this earth, it is coming pretty near to it; and I firmly believe that the great Father has been answering my prayers by giving me this message to carry to you his children, as in the language of that beautiful hymn, he has chosen me (even me)

An ambassador to be
Of realms beyond the sea.

May God grant that this message may be the means of giving you the health, happiness, and joy that I have found in the past few weeks in practicing it.

In conclusion let me exhort you not only to *listen* to what I have been telling you, but to put it in practice. Follow the dear Savior's injunction in regard to food and raiment, and you will surely find a wonderful truth in our first text. Of course, I suppose that text refers primarily to spiritual matters; but I am sure it also includes the things I have been talking about. You will not only have a *longer* life, but you will have it "more abundantly." And this same nightgown will enable you to save expense. I suppose it *is* necessary that even we elderly people should follow the fashions to a certain extent; but we certainly do not need *extravagant* raiment.

By the way, I have recently been looking the New Testament through from beginning to end in order to determine a little more definitely what the dear Savior ate for food while here on earth, and what sort of raiment he wore. When he fed the multitude with loaves and fishes I suppose he ate some of the same himself. At one time he made a little banquet for his disciples; and the only mention made of what they ate is fishes cooked on the coals, and honey and honey-comb. At another time he asked them for some food, and ate in their presence a fish and some honey. At another time his disciples ate uncooked wheat, which they shelled out on the sabbath day. We are not told that he partook of the same;

but I think it is quite likely that he did. So Terry's strong point for uncooked wheat has a precedent away back in Bible times. When he cursed the barren fig-tree because it bore no fruit we are given to understand, at least indirectly, that he partook of that fruit. While at the ruler's feast where he was invited, he probably partook lightly of things the other people ate. In regard to raiment, very little is told us. He was in the habit of washing his feet, or having them washed, because he several times mentions it. Without doubt, he took daily or very frequent baths, as was the common custom of the Jews; and I am inclined to think that not only his raiment but the common raiment of the times was something not far different from our present nightgown or perhaps bath-robe; and I am sure that most people, especially in the cities, would be greatly benefited by some sort of nightgown or nightrobe, at least during the summer months.*

In Cuba, small children wear no clothing at all in many places until they are seven or eight years old. In fact, one often sees naked children, both boys and girls, around in front of the schoolhouse, as naked as when they came into the world. I never learned that they were permitted to go inside in that condition. In visiting a doctor's family, one who took GLEANINGS, and who is a bee-keeper, I found three or four children rollicking about the premises entirely naked. Now, of course, we are not ready to recommend any thing of this kind here in America unless, indeed, it is the babies, say in the bath-room or nursery. I have often thought, when I saw the little ones just learning to creep or walk, that it would be a mercy to them to remove their clothing entirely, or all of it except the indispensable diaper. I wonder if the time is not coming, and coming *soon*, when there will be a modification in clothing with the view of giving them better health, better lives, and that "more abundantly."

OPIMUM AND OPIMUM-DENS BANISHED FROM FOO CHOW, CHINA.

On page 393, June 15, I spoke about Rev. W. L. Beard's report in regard to the opium business in China. Just now the *American Board Quarterly News Bulletin* for Aug. 17 contains the following:

CHINA ABOLISHING OPIMUM.

A magnificent fight is now going on in China for the suppression of the use and trade in opium. It has often been said that the Chinese, both rulers and people, were wholly insincere in their utterance against the use of the drug, and that the proclamations against the cultivation of the poppy and the smoking of opium were a sheer pretense. The rulers themselves were said to be victims of the vice, and there

* Sheldon, in his books, has given us some wonderful and inspiring suggestions in regard to "doing as Jesus would do," and following "In his Steps." Now, how many are there, whose eyes rest on these pages, who would be willing to take up with, or, perhaps I should say, *put up* with such a diet as our Savior probably used? How many of us would be ready to adopt a style of raiment not more expensive and not more elaborate than the garb Jesus wore? Of course, one does not wish to attract attention by being singular or by looking odd; but if a community of people could be induced to go back to this simple life it would certainly be a wonderful help in the way of health and longevity.

was no hope for reform. All this was apparently true three or four years ago, but it is not so now. Those who read Mr. Beard's story in the September *Missionary Herald* of China's new opium war will agree that nowhere in the world is there a manlier or more vigorous fight against this vice than that now going on in the province of Fuhkien, as well as in other parts of China. And this war is waged by the Chinese themselves, aided, of course, by all moral and Christian forces at work in the empire. In the great city of Foochow, of more than a million inhabitants, every opium joint has been closed; whereas five years ago there were more of these joints than there were of rice-shops. In the country the fields of poppies which previously met the eye everywhere are now entirely free from the plant, and in many places wheat is being raised instead. The best citizens have joined with the officials in prosecuting the reform. We gain a new impression as to the moral stamina of the Chinese, and a new hope for the missionary work throughout the empire as we read Mr. Beard's account. The Chinese are worth saving. The occasional public burning, in the presence of thousands of people, of the pipes, lamps, and utensils of opium-smoking must be a profoundly interesting sight in a city which was so recently given over to the use of opium.

May God be praised for the reform work which is not only taking root, but which is growing with vigor away over on the opposite side of this world of ours.

High-pressure Gardening

By A. I. ROOT

HIGH-PRESSURE CORNFIELDS.

A few days ago I had the pleasure of studying cornfields all the way from Bradentown, Fla., to Medina, O. As the trip occupied two nights and a part of three days I could not see the cornfields in the nighttime; but I arranged my travels so that, in the trip going down, I had daylight where it was night coming back. Now I want to tell you what I saw. Away down in Southern Florida the corn had mostly been harvested. Occasionally I saw dried-up ears hanging to the stalks. Well, I saw all kinds of cornfields, all the way from almost nothing at all on the ground, clear up to the beautiful thrifty luxuriant fields in Southwestern Ohio. The corn in Florida is mostly very poor; and, in fact, I saw poor fields of corn all the way from Florida to Ohio; and I also saw a *few* good fields of growing corn in almost *every* locality all along the whole trip, showing that, if one is posted, and goes about it right, he *can* grow corn almost anywhere; but, of course, the cornfields were better, as a rule, the further we got north. Now, the sad and lamentable thing about this whole object-lesson is that there were almost a *hundred* poor acres of corn to one real good one.

It is a sad and stubborn fact that thousands of people go through the motion of planting, cultivating, and harvesting a crop of corn without receiving any thing *near* like a fair price for their time and labor. Hundreds of fields are drowned out by a lack of drainage. There may be some excuse for going on in this sort of way, because once in a while we have a season where the corn is not drowned out by too much rain.

As a rule, it seems to me everybody has *too much* land. All along when we got to little towns I would find garden patches of nice corn, showing that with drainage, fertilizers, and cultivation, etc., it is possible to grow good crops almost anywhere. As we came further north there were more good

fields and fewer poor ones; but not until we got into Southern Ohio did I see acre after acre and *mile after mile* of corn that was *all* good. Great heavy ears were bending over and hanging down in field after field, and one field was just like another—none poor at all. This is the great corn region, where there is rich black soil and almost perfect tile drainage, or at least open ditches. Interspersed among the cornfields were fields of red clover rank in full bloom. And this clover rotation is the key to the great corn crops. And, by the way, where these crops are all good, and always good, you see fine farm dwellings, telephone lines, and prosperous towns and cities. So far as I know, it would pay the farmers in almost every State in the Union to get a glimpse of the rich farming lands in Southwestern Ohio.

Now, do not understand that I am advising you to sell your farm and move to a better locality. You will find the price of such land away up in those localities. What you want to do is to find out by careful experiment how to grow some rank, thrifty, high-pressure corn in *your* garden, say on a few rods of ground. Now, when you find out just what is wanted in your own locality, work early and late. First get a whole acre to do the same, then another acre, and so on, until you get your whole field up to high-pressure corn-growing. It can be done, and it will pay.

Of course, the best place to raise corn on a large scale is in the corn regions; but if you are going through the motions needed to get a crop, for *heaven's sake* get your ground in such condition that every motion, when you *do* make it, will count. The same with any crop; and if you do not know how or what to do, hunt up some man in your neighborhood who is *already* making a success with some particular crop. If you come and take a look at our cornfield to-day, Aug. 23, you would see that I *do* "practice what I preach." See pages 362 and 431, June 1st and July 1st issues.

Notes of Travel

By A. I. Root

FLORIDA IN THE SUMMER TIME, CONTINUED.

In addition to what I told you in the last issue, permit me to say that I greatly enjoyed my trip of 25 days to Florida in July and August. A steady temperature of between 80 and 90 seemed to have the effect on me of banishing all catarrh, grip, hay fever, and every thing of that kind, so my throat and nostrils were clearer and cleaner than they had been before for years. Of course, my daily baths (in the air as well as in water), with the massage mentioned on another page, had much to do with it.

I arrived home on the 13th of August, and am still enjoying excellent health. In re-

gard to gardening and crops in the summer time, there is something peculiar to Florida that is hard to understand. There are quite a good many crops that do not seem to stand the steady hot temperature and abundant rain there, while there are other things that grow nicely. When I first arrived, my neighbor Rood called my attention to a plot of rich ground on which beggarweed was just coming up; and he said he wanted me to take another look at it just before I went back home. To my great surprise 't was all of two feet high, and some of it nearly a yard; and so far as I know this wonderful growth had all been made in thirty or forty days.

I was talking with a man on the cars who grows oranges and grape fruit, and I asked him why their orchards were permitted to grow great tall weeds clear up close to the tree. He said this big growth was needed in Florida to turn under to furnish humus. But he said that, while this beggarweed was worth \$1.25 per 100 for hay, most people thought they could not afford to turn it *all* under, so they cut it and either sold the hay or used it for feed, and then turned under the sod. Now, just think of it! Mr. Rood had already had *two* good paying crops on that piece of ground before growing that beggarweed for hay in thirty or forty days; and yet notwithstanding the fact that he was doing this kind of work year after year there is land all around him that is producing absolutely nothing. A near neighbor has a piece of five acres that I do not think has ever produced a crop of any sort since I have lived in that neighborhood. Mr. Rood's ground is tile-drained. He has also an artesian well for sub-irrigation, and he uses fertilizers liberally on almost every crop.

When I wrote about the mango in our last issue I had never tasted one of the large improved varieties of the fruit. They have been improved so much that they are free from the cotton-like fiber. These large fruits are sold in cities for 50 cts., and sometimes even 75 cts. each; and when I put the first slice of them in my mouth I said it was ahead of the most luscious peach I had ever tasted. At present this new large improved variety is not plentiful, and the fruit sells at a high price; but the common mango, about as large as a goose egg, is very plentiful in the market at only 15 cents a dozen, and they are certainly a most luscious fruit.

The well-known scuppernong grapes were just ripening when I left, and I do believe they are, to my taste, more agreeable grapes than we have here in the North, or even in California. A single scuppernong grapevine with a trellis to support its great branches will often produce as many grapes in one season as a good stout horse can draw. They were retailing in the market, when I left, at ten cents a quart.

Now, then, about the disagreeable things about Florida in summer. Mrs. Root reminds me that, in accordance with my natural disposition, I have given a better glimpse of the pleasant things than I have

about the other side, so I will try to write up the disagreeable things. When the rainfall comes in the summer at the rate of six inches in four hours, as it did once last July in many places, there will be disagreeable floods of water. Of course, proper ditching and drainage would in most cases obviate this. While on the cars we stopped in one town where every street was full of water, and most of the people were wading. A good many times the sandy roads are cut down by heavy traffic so the road is lower than the ground on each side of it. During the wet season these low-down roads are often full of standing water. In this town I have mentioned we passed an automobile where water stood clear up to the axletree. A boy with his trousers rolled up was bringing a horse from the livery-stable. The horse tramped along through the water, knee-keep, until he could be hitched to a rope to pull the auto up on to dry ground. The occupants of the machine looked as if they were very much annoyed. Well, the water did not trouble us very much around our own home, because we have open ditches provided for all such emergencies. The thing that did trouble me, and has always given me more trouble in Florida than any thing else, winter and summer, is the red bugs—see p. 538. Mr. Root suggested that, if I were to give the readers of GLEANINGS a glimpse of my ankles when I first got home, very few people would want to go to Florida. I presume we can, with very little trouble, as suggested on other pages, get entirely free from the stick-tight fleas; but the red bugs are a different proposition. I have asked one of the professors at the Florida experiment station to give me what information he could get hold of on the subject, and I do think the whole State of Florida (or, better still, the Department at Washington, D. C.) should set to work and give the people a full history of the way this red bug propagates, and the methods of prevention and cure.

UNIVERSITY OF FLORIDA,
AGRICULTURAL EXPERIMENT STATION,
GAINESVILLE.

Mr. A. I. Root:—Your letter of a recent date regarding red bugs has been received. I am not sure that I can give you any better remedy for disposing of these pests than what you have already been using. However, a good many find that lemon juice is very efficacious in destroying them. The lemon juice is applied to the affected parts the same as you apply your sal soda and kerosene. Others find that good tar soap is very effective. I can not refer you to any published literature along this line.

August 18.

JOHN M. SCOTT,
Assistant Director.

Now let me add, in order to be truthful, that old residents are troubled but very little by these pests. Raymond Rood, a school-boy of a dozen summers, goes all around through the woods and everywhere else with his trousers rolled up to his knees, barefoot, of course, and the red bugs do not touch him; while just as soon as I set foot in that locality, especially if I go out through the woods or even among the stuff in my garden, it seems as if they would almost eat me up. My impression is that one who stays

on the pavement or even on the traveled roads would have little or no trouble. These insects seem to be on rotten logs and stumps, and perhaps on the brush and growing stuff in the woods. The effect is just about like that of poison ivy or other poisonous plants here in the North; and several have suggested that I was simply poisoned. But those who ought to know say it was red bugs and nothing else. The bite of the mosquitoes or even little gnats often affect me in much the same manner. The little gnats are *sometimes* troublesome in the morning and evening in Florida.

Perhaps I might tell you that, while the temptation to scratch the affected spots is almost overpowering, you will get along very much better if you do not do any scratching at all. I think many of you have found the same thing true in regard to mosquito bites and even bee-stings. The directions I gave years ago in the A B C book in regard to bee-stings was, after you get the sting out, let the wound alone, "get busy," and think of something else. Just one thing more. The whole trouble is ended very quickly when you get away from Florida. By the time I reached my Ohio home the burning and itching had ceased entirely, and in two or three days my ankles were in a normal condition. I forgot to say a cold-water bath and brisk rubbing with a coarse towel gives the best and most immediate relief of any thing I know of. Northern hunters, when going out through the woods, surveyors, and many other people, wear tight leather leggins from the shoe up to the knee, and I have been told that this is a positive remedy for these microscopic bugs that exist in the woods.

There, friends, I can not think of any thing else by way of objection to living in Florida during the summer; in fact, I found it a very much more comfortable place during our *hottest* summer weather than it is here in Ohio.

HOW HOT IS IT IN FLORIDA IN SUMMER?

On page 537 of our last issue I told you I had once seen the thermometer up to 94. My neighbor, Mr. Ten Broeck, however, calls me to order. He said my thermometer, even though it was a standard, and practically correct, was hung in our woodshed; and in the forenoon especially the sun came down very hot on the east wall and roof of said shed. While we were talking the mercury stood at 94. He asked me to hang it by the side of a north window in our sitting-room. In a few minutes I looked again, and the temperature was exactly 90. This incident reminds us all that it makes a difference where we place a thermometer. "In the shade" is not always very definite. If you wish to be correct, place the instrument in some place in the house where the sun does not strike, even at noon, nor on the wall on the outside where it hangs. The temperature during the three weeks mentioned was never above 90, and only a few times below 75. In the night it

TEN YEARS OF JULY WEATHER IN BRADENTOWN.

YEAR	Below 85 at noon	Below 75 in morning	Cloudy Days	Partly cloudy days	Northwest gales	Rainy days	Amount of rain	Minimum	Maximum	Mean Minimum	Mean Maximum
1901.....	0	3	4	11	0	10	7.60	75	92	76	89.8
1902.....	1	3	2	12	0	4	10.00	70	96	75.4	91.4
1903.....	1	20	3	18	0	10	9.75	71	93	74	89
1904.....	5	27	0	7	0	14	11.70	67	90	72.6	85.8
1905.....	6	16	1	20	0	13	9.14	70	91	74	86.8
1906.....	6	6	1	16	0	11	7.16	74	90	75.5	86.5
1907.....	3	24	0	19	0	11	7.20	66	90	69.7	87.9
1908.....	2	26	0	8	1	10	6.61	68	91	72	88
1909.....	4	5	2	20	0	14	13.97	72	91	73	86
1910.....	5	25	0	20	0	15	8.85	67	90	72	86.4
Means.....	3.3	15.5	1.3	15.1		11.2	9.18	69.8	91.4	73.4	87.7

generally stands at 75 or 80; but several old residents assured me that I had accidentally picked out about the three warmest weeks they had had in a dozen years. That you may have accurate figures in the matter, I submit the above table of temperatures for July, for ten years past, furnished by Mr. Ten Broeck.

From the table it will be seen July was about the average for ten years past, the greatest departure being in the number of mornings with the temperature below 75°. In regard to the number of days on which rain fell, it is to be noted that the hours of rainfall are few in number. On several of the rainy days the sun shone all the time except during the shower. The average duration of rains is about 30 minutes; seldom over an hour. During 18 years there have been only four days on which rain fell continuously from sunrise to sunset. It will be noted that in no day in last July was it entirely cloudy. Those features of the absence of much cloudy weather and long rains make the Florida climate so delightful. The heat, too, while steadily uniform, is never so extreme as it is further north; and the absence of chilly weather, when fires or thick clothing is necessary, that is so common north, is also a delightful feature of the Florida climate during the summer season; so that it may be safely asserted that the climate of Florida is the least miserable of that of any part of the United States. The Pacific coast, with its rainless summer and consequent dust and high range of temperature, is a good deal more miserable than the moist summer season of Florida with its lower range of temperature and vigorous growth of vegetation. Then in winter the Pacific coast has its long cold rainy spells and gales, and Florida has dry clear weather, with just rain enough till March; then we are usually short, it must be confessed, till June.

H. H. TEN BROECK.

water containing minerals; but I have so long been accustomed to pure soft water that nature always makes some kind of protest, especially when I drink the artesian water of Florida. I am told I might become accustomed to it, so it would be perfectly agreeable; but while rain water is so cheap I do not think I shall change my drinking-water. You will understand from what Terry says in the above that he filters even his rain water. Well, I suppose a good filter will remove some dust, dirt, and debris from almost any rain water, even if it falls on a clean slate roof. We have not used a filter for some years. Distilled water is, of course, all right; but the world seems slow in learning the importance of keeping this distilled water in either a glass or stoneware receptacle. If put into metal pails or tanks, especially galvanized receptacles, the distilled water begins at once to attack and dissolve with remarkable avidity almost any metal. Down in Florida, when it does not rain very often in the winter time, say for a week or more, I often catch water in a lot of clean tin pans set out in the rain. This is then kept in a large covered pitcher. Of course the pitcher is placed in the coolest place in the house; and this pure rain water suits me to a dot.

And by the way, friends, I do think that Montgomery Ward & Co. should have a vote of thanks from the whole United States, and perhaps from the whole wide world, for having done more toward establishing fair and uniform prices for every thing any one may want to buy. Their catalog will be worth dollars to you if studied, even if you never send them an order at all, because it gives you a birdseye view of what is in the market, and what you ought to pay for it.

WATER FOR DRINKING PURPOSES; WHERE SHALL WE GET IT?

Since Terry's book has gone out, inquiries keep coming right along as to where to get such a filter as he describes. In answer to the question, he sends us the following;

Dear Mr. Root:—The man whose letter you enclose asks for a filter to make rain water nice and clean. The one we have used for years, bought of Montgomery Ward & Co., is a complete success for this purpose. It is the best I know of on the market. Of course, no filter will take mineral out of hard water. Boiling dangerous water is, of course, some help; but one simply eats the dead carcasses of the bacteria, instead of the live things. It doesn't seem as though there were any great gain. There are only two kinds of water that are right, the best known to mortals. They are clean rain water filtered, and distilled water. We use the former entirely. God gives any one a chance to have pure water.

Hudson, O., July 19.

T. B. TERRY.

The above agrees exactly with my experience. Once in a while I am obliged to drink

PRICE OF SEED ADVANCING YEAR BY YEAR.

I have been very much interested in the possibilities of sweet clover as a soil-improver, for six or seven years. I have been obliged to lime my land and inoculate it with the sweet-clover bacteria, and am now making some headway. The first seed I bought in quantity was from Alabama at \$5.00 per 100 lbs., and for the last five or six years they have advanced the price each year, and the past spring I paid \$8.00 per 100 lbs., and freight. I am now sowing a little with other legumes in my eighty-acre orchard.

I have just started in with bees this spring, to see if they will make the setting of the apples any more certain.

DuBois, Ill., July 5.

A. A. HINKLEY.

Cleanings in Bee Culture

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Editorial

THAT SCHEME OF FILLING 60-LB. SQUARE CANS.

If the reader failed to take notice of the article by W. C. Evans in Aug. 1st issue, p. 489, he should do so now. This is one of the most valuable communications we have ever published, and his trick of filling square cans is so unique and simple that every extracted producer who puts up his honey in cans of this sort should not lose sight of it. We have tested it here at Medina, and *know that it works.*

OHIO BEE-INSPECTION WORK.

CHIEF INSPECTOR SHAW, our State Entomologist at Columbus, finds he is having more calls to visit apiaries supposed to be diseased than he can answer promptly. He has about ten or twelve men at work. Our Ohio bee-keepers will, therefore, exercise a little patience, as we know Prof. Shaw is doing all he possibly can, considering the fact that he has just begun on the problem of eradicating and holding in check bee diseases in Ohio.

HONEY-CROP CONDITIONS; PRICES FIRM.

THE evidence begins to show, either that there is going to be a greater scarcity of good comb honey, Eastern or Western, than we supposed earlier in the season, or that there is a large amount on the hives which bee-keepers have failed to take off. If this latter is the fact, producers should remember that *now* is the time to get good prices. It would be a mistake to dump it on the market just about the holidays, or a little after. "The early bird is the one that catches the worm." This applies particularly to comb honey.

While there is not the same scarcity of extracted, yet the crop probably will not be as large as was originally anticipated. In our judgment, prices should be firm on both comb and extracted.

FOUL BROOD IN BEE-TREES.

THERE has been a general feeling that brood diseases are unknown in colonies living in trees, the idea being based, perhaps, on the assumption that a swarm going into new quarters would not carry the germs of the disease. Whether or not this is true,

there is no question but that colonies may get foul brood through robbing diseased colonies, and bees from trees are likely to rob as quickly as those from colonies in hives. In a recent letter Dr. E. F. Phillips made the statement that bee-trees are frequently diseased, and, in regions where disease is epidemic, generally so, this being a serious handicap in cleaning up the trouble. He said further that reports of disease in trees were often received. Dr. Phillips thinks that, by keeping a close watch, the disease in a locality may be kept under control; for before long the colonies in the trees die and the combs are destroyed. At any rate, past experience shows that the situation is not hopeless, and that the careless bee-keeper is a worse pest than the bee-tree.

THE IGNORANCE OF THE PUBLIC IN REGARD TO APIARIAN MATTERS.

WHEN legislation is proposed to control shipments of cattle, or whenever rules are adopted in reference to cattle-breeding, etc., the newspapers generally give a pretty accurate account of the whole proceedings; but whenever bee-keepers get together and formulate a set of rules, or when legislation is proposed in the effort to control bee-diseases, it seems to be the signal for fertile-brained reporters to write up a funny "story" for their respective papers. Perhaps it is because the bees are considered nothing but "hot-tempered bugs" that any reference to them should be considered so ridiculously funny. The following paragraphs from one of the above-mentioned funny stories illustrate the attitude of certain newspapers toward the efforts of bee-keepers:

Naturally one of the first things to be done is to make each bee register. Identification tags could be furnished, and each applicant that expects to engage in the honey-making industry may be compelled to pass a rigid examination. One can not be too particular about these things, and should compel every bee to respect the new regulations.

Queen-bees probably will be encouraged to settle in this State, and swarming prohibited. A competent squad of pan-beaters to cope with the swarming evil will naturally be an important branch of the inspector's staff. Plain-clothes bee detectives will doubtless be immediately detailed to break up the bee gangs that infest the woods.

There will likely be established certain regulations providing for what might be termed interstate bee licenses. As the conditions exist at present, any bee from Pennsylvania or New York can come into the State and gather sweets from the gardens without paying a cent of tax, which is, of course, a great injustice to the local hunting bee.

It is expected that a delegation of New Jersey bees will wait upon the new inspector and impress this point upon his mind or any other available spot.

PAINTING HIVES WITH PURE LEAD AND OIL.

WE desire to indorse every thing our correspondent, Dr. A. F. Bonney, says in behalf of pure white lead, page 586, this issue. There are some localities where a lead-zinc paint gives better results; but the objection to zinc is that it makes the paint so hard that it is liable to come off in flakes, while the pure lead will chalk off. For example, a house that is painted with pure lead can be repainted, and look as good as new; but a lead-zinc paint that has begun to come off gives a patchy uneven appearance when a new coat is put on. It takes much longer to remove the zinc scales than it does to repaint the house. For these reasons the average bee-keeper will find it more satisfactory to use a pure lead and oil than to use a paint containing 25 or 35 per cent of zinc. Zinc can not be considered an adulterant, because it is more expensive than lead. Its use is only on the ground that it gives a harder and more glossy surface—something quite desirable for *inside* work. The zinc-lead-painted houses will look brighter and nicer for a year or so than one covered with pure lead; but the trouble comes when the pigment begins to come off.

HOW THE MICHIGAN ASSOCIATION HELPS ITS MEMBERS.

THE Michigan Bee-keepers' Association is a live one, the members hearing from their efficient secretary, Mr. E. B. Tyrrell, frequently. Crop-report blanks are sent out each season asking for full data concerning the probable crop, especially as to whether the bee-keeper will have honey for sale; and if so, in what shape—also whether he will have bees and beeswax for sale. This information is summarized in the annual booklet in which is a list of the members, the amount of honey they will have for sale, etc.

Not content with this, another booklet is gotten out, giving the names of the honey-buyers and their wants for the season, this list being confidential to members only. A printed slip is sent out about the time this booklet is sent, reading as follows:

Member:—The Executive Board's advice in regard to the minimum price for honey for this year will be mailed you with the booklet as soon as published. In the mean time, ask enough.

E. B. TYRRELL, Sec.

Another slip has to do with brood diseases. The advice given to any member who has a brood disease with which he is not familiar is to write to Dr. E. F. Phillips, asking for a box in which to mail a sample of brood for examination. The box is sent out by the government without charge, and a sample three inches square may be forwarded for a free examination, with instructions for treatment in case a disease is found. The bee-keeper is also advised to get into communication at once with Hon. R. L. Taylor, Lapeer, Mich., the State foul-brood inspector, his services costing nothing, as he is paid by the State.

ARE BEES TRUE HIBERNATORS? WHAT IS HIBERNATION?

ON p. 585 of this issue our old correspondent Mr. J. E. Hand takes issue with us on the proposition that bees are semi-hibernators, and he apparently furnishes evidence in support of his theory; but no less an authority than Entomologist Prof. H. A. Surface gives it as his opinion that some of the bees, during the winter, pass into a condition that approximates true hibernation, or what we may call semi-hibernation. While it is true that bees inside of a cluster are very much alive and active, the bees forming the outside wall (for outdoor wintering) during much of the winter are chilled and inactive. In this condition they will exist for days, taking no food, and are, to all appearances, dead. The bees that we call semi-hibernators are not true hibernators, as we understand it, because they can not exist indefinitely throughout the winter in this condition. There must be a spell of warm weather during which they will revive, take food, and apparently be none the worse for their experience. We have held the theory for some time that the bees inside of the cluster that have been well fed will take the place of those on the outside that have served to form the protection-wall around the general cluster. While this is theory, it serves as a basis for investigation. In the case of bees remaining in a chilled condition we will say that we have proved that they may remain that way for a week or ten days, but not very much longer. Doubtless while they are chilled their vitality is drawing on the reserve food in the intestines. When that is gone, death ensues. Now, no animal, either insect or quadruped, can remain in a condition stiff with cold for a period of ten days unless it is a hibernator of some sort.

Our correspondent asks this question: "Did you ever see an animal or insect in a state of true hibernation? If you have, you will know they are dead so far as the power of motion is concerned." Evidently our correspondent has never run across a hibernating bear in midwinter. His bearship will appear to be dead; but poke him a little, and, presto! he is about as active and furious as he ever is; he will either run or attack. Is it not true that a hibernator, as we understand the term, is always "dead so far as the power of motion is concerned"?

THE FERGUSON UNCAPPING-MACHINE; SOME OF ITS LIMITATIONS AS AT PRESENT DESIGNED.

DURING the last few days we have seen in successful operation the Ferguson uncapping-machine at one of the outyards of E. D. Townsend, located near Clarion, Michigan. This was illustrated and described on pages 404 and 405, July 1st issue of last year. Our readers will remember that this is the machine that uses a series of stationary vertical V-shaped knives, between which the combs pass to remove the cappings. The

only movable thing about the appliance is the comb.

While the machine is not suitable for average conditions in an extracting-yard, yet in our judgment it works very nicely on a certain class of combs. Mr. Townsend says that, when Langstroth frames without spacing projections are placed in a super so that eight of them will just fill a ten-frame body, the machine uncapper will handle them more easily and more rapidly than the uncapping-knife. But even if it is no more rapid it would certainly be an advantage to use it on such "fat" combs, because the surface of each comb is planed off as smooth as a board.

But having said so much, the machine is very limited in its application. As constructed at the present time it can not be used with Hoffman frames, nor with any self-spacing frames, in fact. There is a possibility, and even a good prospect, that it can be modified so as to take in such frames. The ordinary extracting-combs as one finds them in the bee-yard can not be run through it with any degree of satisfaction. In order to get good results with the machine as at present made, one must have "fat" combs of the unspaced type; and very few bee-keepers in the country can have all of these conditions.

In the hands of a person without experience, the Ferguson (if the combs are right) will do twice or three times as much work, and much better, than that same person could do with an uncapping-knife; but in the case of an old experienced extracted-honey producer, familiar with the art of uncapping with a Bingham knife, the difference in speed, says Mr. Townsend, will not be so noticeable. Indeed, he was of the opinion that he could work almost as fast with a knife as with the machine. But even if no faster he likes it because its work is so perfect.

An ordinary thick-top extracting-frame without projections can be used readily in the machine; but unless the frames, no matter what the type, are spaced wide apart or eight to the ten-frame super, they will be too "lean" to be cleaned up every time with the machine. This will necessitate re-handling with the uncapping-knife. In that case it would be about as quick to use the knife clear through. So far this confirms the experience of the Hutchinson Bros.

We shall have some illustrations a little later that will show the machine in use, and Mr. Townsend will tell his own story; but the editor could not forbear giving the public a little advance information on the present status of an uncapper that gives promise of being more of a success than any thing we have seen.

BEEES AND FRUIT; SOME NEW AND IMPORTANT EVIDENCE FROM DOOLITTLE.

ATTENTION is particularly drawn to the article by G. M. Doolittle, in his regular department, p. 581, on the question of whether bees are the original despoilers of fruit.

Our correspondent shows how birds and mice make the original perforations in the fruit at a time when they would not be observed by any human being ordinarily. The bees coming on later, during the middle hours of the day, receive the blame for making all the mischief.

Some years ago, as our readers will remember, some neighbors of ours complained that our bees were puncturing their grapes, and it certainly looked like it. Later investigation showed that a little bird known as the Cape May warbler (*Dendroica tigrina*) came during the early hours of the morning, and with their sharp beaks made a perforation in every grape on the bunch. Bees coming on later were observed sticking their tongues into the grapes, and, of course, were accused of doing *all* the damage. The case Mr. Doolittle refers to is only one among many others like this, showing how bees are often falsely accused.

While it is true that they are annoying while hovering around broken fruit, it may be said that they are appropriating the juices of a product that was *already* damaged, and which would be unmarketable, even if the bees had never come near it.

There is one point on which we would take issue with our correspondent. Mr. Doolittle seems to be of the opinion that bees *can* puncture fruit, but asserts that they never *do*. All the evidence that has been presented shows, we believe, that bees *can* not. They are not possessed of cutting jaws, like the wasps. That was conclusively proven at the famous Utter trial, where the bees were completely exonerated by the jury. As the government expert, Frank Benton, testified at the time, bees can gnaw a piece of wood or make holes in cloth because they can grab small splinters or fiber in their mandibles and pull them apart, just as we can unravel a rope or a piece of burlap with our fingers; but the skin of any fruit is smooth and without fiber. The fact, then, that bees can make holes in cloth by no means proves that they can cut the skin of a sound grape, a plum, or a peach. Bees have tried repeatedly to make incisions through the skin of fruit, as has been shown repeatedly by various investigators; but that beautiful balance in nature that we see so often has provided against this.

We take the view that they *would* puncture fruit if they *could*; the fact that they *do* not make incisions through the skin of fruit is the best evidence that they *can* not. They will rob, as we know, on the slightest provocation. They will appropriate any thing sweet they can get during a dearth of honey; but no authentic evidence, so far as we know, has as yet been produced showing that bees have ever punctured sound fruit. Many times they apparently are guilty of the act; but extended investigation has *exonerated them in every case*. While God makes one set of animals prey on others, he has not made a bee so that it can prey on perfectly sound fruit.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

I LIKE Mr. Fowls' veil, p. 557, but I don't like the extra denim shirt that goes with it. One shirt is hot enough in good bee weather.

W. R. WIGGINS' water-bottle, page 246, is good, but I suspect he will find it better and cheaper to have a tub of water with cork-chips thrown in.

TERRY, *Practical Farmer*, p. 66, accuses Fletcher, the chew-chew man, of eating too fast. Now, isn't that a joke? Fletcher spends 14 minutes at a meal; Terry, 40 to 60.

VIRGIN QUEENS have a passion for tearing holes in queen-cells without reference to what may be in the cells. In a number of cases where queen-cells have been caged I have known the young queen after emerging to dig a hole in the side of her own cell.

F. L. POLLOCK, page 552, takes 50 lbs. extracted white honey as the average yield the country over. Is there any way of knowing whether that is correct? [If a bee-keeper's locality will not average 50 lbs. for a period of ten years, he had better move to pastures new if he can.—ED.]

"USUALLY with a first swarm, the old queen and the swarm leave just before or just about the time that the virgins from the cells begin to hatch," p. 497. Doesn't the first swarm usually issue about the time the first cell is sealed? It may issue a good deal sooner; but I never heard before of one waiting till a virgin was about to emerge.

REPLYING to F. E. Monekton, I don't know of any test by which a bee-keeper can tell beet from cane sugar. Neither do I believe granulated sugar from beets is death to bees in winter. I have fed a few thousand pounds of sugar, and I suppose much of it was beet sugar. So have others, yet I don't know that any one has reported bad results, although in England they insist that only cane sugar should be used. Yet the pure-food law should not allow beet sugar to be sold as cane. [Like Dr. Miller, we have fed many thousands of pounds of both beet and cane sugar; but so far we have failed to detect any difference in favor of one over the other. Some English writers have, however, asserted that cane sugar is far superior to beet.—ED.]

A. I. ROOT, page 570, in the American Revision you will find no mention of the Savior eating honey. But it was an important part of the food of a man of whom the Savior said no greater had been born. [Thank you, doctor, for having reminded me that I have been a little careless in reading my Bible. The first passage I had in mind does not, come to examine it, mention honey; and I find the American Revision has taken out the word "honeycomb" as you state.

But there is, however, a side-reading saying, "Many ancient authorities add 'and a honeycomb.'"—A. I. R.]

TESTING hens is wisely favored, page 505. Dairymen in this region have formed an association for testing their cows. It's easier to test bees than to test hens or cows. They test themselves automatically, and all the bee-keeper has to do is to record the results of the tests. But what good to test hens, cows, or bees, if no advantage of the tests be taken by sorting out and breeding from the best? The hen-men and the cow-men do this, but I'm afraid not many bee-men do. Yet it pays bee-men, probably, as much as it does hen-men and cow-men.

THE DROUTH this year was, *I think*, a little the worst I ever knew. The flow stopped July 10, and pastures became as brown as in winter except spots of green. It looked as if clover might be dead beyond recovery. Aug. 15 came a heavy rain, and gradually the dead surface came to life almost as if by miracle. I've just been out through the pastures, Aug. 31, and I'm not sure I ever knew them more thickly carpeted with clover! Hurrah for next year! [The drouth seems to be broken all over the country; and the best part of it is, white clover is very much in evidence. A summer drouth does not seem to affect the clovers; but a fall drouth, or alternate freezing and thawing during winter, has a disastrous effect. Indications are certainly good for a clover crop next year. We base this statement on an extended trip through Ohio, Pennsylvania, New York, Ontario, and Michigan. We assume that the conditions that prevail in those States prevail also in all other sections where clover grows.—ED.]

AFTER READING about tendency toward extracted rather than comb honey, p. 542, I made a comparison of present prices with those of ten years ago. Taking those quotations which give prices for both kinds of honey, and taking highest figures for each, I find that for Sept. 1, 1910, the price of comb is 91 per cent more than the price of extracted; while for Sept. 1, 1900, it is 100 per cent more. That surprises me a little. I had not supposed extracted was so low in comparison with comb, and I supposed it had gained more than it really has. Another thing is a little surprising. Taking those best prices, it appears that comb honey is only 5½ per cent higher now than it was ten years ago, and extracted only 7¼ per cent higher. In the face of advances in all other lines that's a bit discouraging. [These figures go to support our statement on page 582, but the actual difference is not so great as we supposed. However, it is enough to make it felt. You say it is a bit discouraging that there is not a greater advance in view of the advance in other food stuffs. If you will stop to think, you will see there has been no greater advance in sugars and syrups. If these went up in price we would naturally expect honey to do likewise.—ED.]

Siftings

By J. E. CRANE, Middlebury, Vt.

Virgil Weaver's prediction of the honey crop for 1910 makes interesting reading beside the crop reports that have of late been coming in.

One of the minor advantages of a steam-heated honey-knife is that it shaves off the cappings and does not break the comb down as much as a colder knife.

While it is desirable to let our honey ripen, I believe there is much in what Mr. Greiner says, page 342, June 1, in the value of extracting during the flow to secure a large yield.

That steam uncapping-knife is a decided success. The only fault we find with it is, it is a little heavy at first to one unaccustomed to its use. It certainly slices off the cappings nicely, though.

Fred Wulf's experience in selling honey is of value, page 349, June 1. He says he tries to get the storekeepers started, and get them to place the honey where it will be seen. This is often half the battle.

We have used this season an automobile for outwards, and find it a great convenience. I believe we can take care of one or two more yards of bees in the same time as before, when we depended altogether on horses.

Dr. Miller, page 338, June 1, says he uses, in introducing a queen, a double wire cloth between the colony and the super that has his queen. Is this cloth simply folded double, or is there a space between each layer of cloth? [We understood that there was a space between.—ED.]

Mr. Dadant page 336, June 1, gives in a nutshell the whole truth in regard to the use of new and old foundation. The new is better than the old until the weather or the bees can warm up the old, when there appears to be no difference.

Wesley's remarks concerning the retailer, page 340, June 1, are worth remembering. Surely the more retailers we have the larger profits they must have to live. Suppose there were half as many retail grocers as farmers; we can readily see what enormous prices they would have to charge in order to live.

Reference is made by the editor page 401, July 1, to an editorial by Mr. Hutchinson,

of the *Review*, on the loss of honey by running an extractor by hand rather than by power. Estimating the loss at one pound per ten-frame super, i.e. a crop of 20,000 lbs. the loss would amount to 500 lbs. I believe our own loss has been much greater than that, and another year we mean to use power. Where bee-escapes are used, the honey cools to some extent and the loss is much greater.

The discussion on pages 72 and 73, Feb. 1, on absorbents vs. sealed covers, is one of much interest, showing, it seems to me, that both parties are at least partly right, or that both methods are practical. I have been in the habit, when this subject is discussed, of taking pains to look and see where the opposing parties are located, and, so far as I remember, those who prefer sealed covers live much further south than those who prefer absorbing cushions, with colder winters. Now, it is quite certain that we can winter bees very well, even in this climate, with sealed covers; but my own experience is that we can do better without them. Under sealed covers, I have found the brood-chamber quite too wet in spring to suit me; while with absorbing cushions above, the brood-chamber is dry and clean. In early spring we always find the cushions damp on top, but never on the under side unless from a leaky cover, and this dampness all dries out long before we take the cushions off in May. I much prefer my surplus moisture to be in the cushion rather than in the brood-chamber.

I have no doubt that too much upward ventilation has been given through absorbent cushions. With the mercury at 20° below, there is a strong tendency for the cold air at the entrance of a hive to drive the lighter warm air above the cluster of bees up through the porous cushion. I used to think that clean burlap was the best thing to lay over the frames before putting on cushions, and have made my hands sore rubbing propolis from old cloth before using it, but of late years have found it unnecessary to remove all the propolis. A board laid over part of the brood-chamber before the cushion is laid on works well, or two boards laid on top loosely will allow enough upward ventilation to keep the brood-chamber dry. Where upward ventilation is given through cushions, only a very small entrance is needed. Two inches long by $\frac{1}{4}$ high is ample, or a $\frac{3}{4}$ -inch hole alone.

Of quite as much importance as warm cushions is a small brood-chamber for small colonies. We are successfully wintering small colonies on four Langstroth frames.

From what you say, Mr. Editor, in footnote, page 121, Feb. 15, I infer that your hive-covers come down close upon the cushion. This may make quite a difference, as in our hives there is quite a chamber above the cushion, and some circulation of air; and as soon as the sun warms up in spring the cushions lose all their moisture without taking them off the hives.

Bee-keeping in the South-west

By LOUIS SCHOLL, New Braunfels, Texas

TWO EXTREMES.

There's such a thing as having things at extremes in one's apiaary work. The writer may claim such to exist in his own, in that one of his assistants hails from far-off Canada while the other is a real Mexican. Both have been hard workers so far. The strangest part about them, however, is that the Canadian likes our hot weather while the Mexican does not.

THE TEXAS HONEY CROP.

Although the Texas crop is a short one this year, it is a safe guess that there is more than half a crop, taking into consideration the entire State. Many localities have been favored with a good crop, while others have fallen short of the average, and still others have had less than even half a crop. As a whole, however, the bee-keepers can not complain. The good prices received will aid quite a little in making up for the shortage.

THE NATIONAL CONVENTION.

Albany, N. Y., is the place of the National Bee-keepers' convention this year, which will be held Oct. 12 and 13. From the notices that have appeared, the prospects are good for a big old-time bee-keepers' meeting. The "carload of bee-keepers" idea is a good one, and it is hoped there will be several of them *en route* to the convention this year. The prospects for a carload from Chicago to Albany are bright, and all those who can join this from the West should take advantage of the opportunity. Let us all hope that this will be one of the best meetings the National has had.

KEEPING MORE BEES.

Specialty is the order of the day to such an extent nowadays that it is not unusual for a great many bee-keepers to fall more and more in line with this trend toward specialism. Editor Hutchinson, of the *Review*, has advocated this matter to a great extent, and it has been bearing fruit. His "keep more bees" has been heard far and wide, and is in many a bee-keeper's mouth. The writer, although working along those very lines years ago, before he read the *Review*, has known of the value of specializing in certain lines of work. It enables one to accomplish more with little more expense, bringing in greater returns with a larger profit. But it takes a man with business get-up to do it. Then it takes a location that will allow it; then a system of management, and the right kind of hives and appliances must be adopted. Some special articles on the latter would be interesting to some of us.

SELLING YOUR OWN CROP.

In one respect our Texas bee-keepers are ahead of their brothers up north. Instead of selling to commission men, as is, apparently, the more general custom in the North, the majority of our extensive bee-keepers sell direct to the retailer or to the consumer. In this way they cut out the middlemen's profit, and this means that this profit goes into their own pocket. Many of our smaller bee-keepers sell all their honey in this way, while a good many others sell to wholesale dealers from whom they get from $\frac{1}{2}$ to $1\frac{1}{2}$ cts. per lb. less than if they sold direct. These latter are men who, in the first place, claim that they are not adapted for selling honey themselves, or else that they do not know how. There is still another class of producers who prefer to sell their entire crop in this way, claiming that they can do better to let the wholesaler do the selling for the difference in the price; but the time is here when more and more are selling direct and at a good price.

HAVE HONEY PRICES ADVANCED?

In my old account-book I have found some figures that have made me think this matter over seriously. Just fifteen years ago our crop was something like 3000 lbs., of which about one-third was section honey and the rest extracted. The sections were sold at an average price of $8\frac{1}{3}$ cts. each, while the extracted was sold in the home market as far as possible, and at the ridiculously low price of 60 cts. a gallon, or 5 cts. per lb. There was so little demand for extracted honey in the markets that we could not ship it out; but not being able to sell all of it in the home market the rest was finally shipped off for $3\frac{1}{4}$ cts. per lb. It was amber honey, but fine in quality. Gradually the price went up to 5 cts. for extracted honey and 9 for section. Later on, section honey was quoted at 11 cts. per lb.; but about this time bulk comb honey came in and very soon took the place of the section honey. It was first sold at an average price of $6\frac{1}{2}$ cts., while the extracted brought 5 in a limited market. From this time the prices of the two kinds of honey have gone up from $\frac{1}{4}$ to $\frac{1}{2}$ ct. a year. Several years ago the reigning prices were 8 cts. for bulk comb and 6 for extracted. This difference of 2 cts. per lb. between the two kinds was established and will remain. To-day 10 cts. is the average price for bulk comb honey, and 8 for extracted. Some who sell direct are realizing even better than this.

Taking it all in all, we in Texas can safely say that the prices of honey have kept pace with other articles of food. The prices mentioned above are for the honey f. o. b. at the bee-keeper's shipping-point, in a wholesale way. The dealer has to pay the freight, add his commission, and then make a profit when selling to his customers. In the retail market our bulk comb honey brings 15 to 18 cts. per lb. at the present time.

Conversations with Doolittle

At Borodino

BEES INJURING FRUIT: WHEN BEES WORK ON FRUIT, WHAT BREAKS THE SKIN IN THE FIRST PLACE?

"I'm in trouble. My neighbor says my bees are eating up all his pears, and stinging the children when they go to pick them up. What shall I do?"

"First, take him some honey and tell him you are very sorry the bees are inconveniencing him."

"But I fear it is too late for that. I told him I had as good right to keep bees as he had to raise pears. And he got mad and swore at me."

"That was where you made a great mistake, and just where very many fail. While, without doubt, you have a perfect right to keep bees, yet the man who is annoyed by them can not see why you should be allowed to keep something which he thinks is destroying his property and keeping the children from gathering it."

"Yes, but he said my bees were eating up his pears. And I told him that bees never make the first start on any fruit—that if he would keep his chickens away from the pears, so they would not go along and take a mouthful or two from each pear, the bees would not touch them at all. He told me I was a liar, and I got hot."

"Well, well. I am very sorry that you should have given our pursuit the black eye in that way. If he had told you that he once kept bees, and knew that bees would enlarge an entrance to their hive, and narrow down wood separators by biting them, and that they could bite through a pear, peach, or grape skin just as well, you would have found yourself without a reasonable response."

"Now, while I am free to admit that bees *could* tear open the skin to fruits, I have never known of their so doing, although I was once almost certain that they did do it. Some twenty years ago there came a dearth of nectar at just the time a much-prized kind of pear was ripe. I had no chickens, yet the bees fairly swarmed on the pears on the ground. On a closer inspection I found the bees were also at work on those in the tree; but I noted that, instead of the skin being gnawed so that the bees could work through it, each pear on which they worked had a deep hole going well down toward the center. This I knew was not the work of the bees, so I got up as soon as there was any light the next morning and stationed myself in a little thicket near the tree. As soon as I could see, an oriole or golden robin, as they are called here, came into the tree; then another and another, till there were some ten or twelve of them at work on those pears. And they did not seem satis-

fied to stay at any one pear for any length of time, but, taking a mouthful or two out of one, they would go to another, and so on. During the day not a bird of this kind was seen about the tree; and had it not been for my early morning watch I should have felt that the bees were the real enemy of my fruit."

"You spoke of grapes. Another neighbor often accuses my bees of destroying his grapes."

"Bees and grapes have been discussed for ages, almost; and I have always claimed that bees *could* bite through a grape-skin if they set out to do so. At certain times during the past I have been almost convinced that they really did do it. I grow eight different kinds of grapes, among which is the variety known as the Worden. This is a large black grape, but not as sweet as some of my other kinds. After a little I noticed that the bees were at work on these Wordens, but on no other kinds. Two days after they had commenced work on the grapes, on passing by these vines I found the bees fairly swarming on the bunches next to the wood-shed, which was partly filled with wood. As this shed broke the wind it was much warmer here than at the other end of the vines, and I thought that this was why the bees worked here. The skin of the grapes on the upper side of the bunches was badly mangled, and in many cases there were two and even three bees inside the skins sucking up the juices. I went to Mr. Clark's Wordens, but not a bee nor an injured grape was to be seen. Every thing pointed to the bees till the next day. On returning I picked a pan of the Worden grapes, fearing the bees would ruin all of them, and set this pan in the wood-shed. Imagine my surprise to find all of the upper grapes in that pan with skins mangled the same as those on the bunches the bees were at work on, when I went to the wood-shed about 10 A.M. for an armful of wood. On a close examination I found mouse-droppings scattered about among the grapes. I now had the clue to the matter, as I knew that, in all the cases which had come under my notice, the bees had worked on the grapes which were next to some building, pile of wood, stone, or rubbish of some kind which would harbor mice. I took the pan of grapes from the shed, removed every bunch from the vines on which the bees were at work, and put them in the house. The bees hovered about the other bunches and crawled over the grapes for nearly an hour, growing less and less, till at one o'clock, the time they were the thickest the day before, all the bees had left, only a stray one, now and then, hovering about. The next morning I was at the Worden vines before any bees had thought of getting out, and found some twenty bunches, nearest the woodshed, with the grapes having their skins all mangled like those picked off the day before. I left them to see the result, and the bees swarmed on them as soon as the sun was shining."

General Correspondence

BREEDING ENTIRELY FROM ONE QUEEN IN A SEASON.

Do we Require an Island Apiary for Breeding the Best Queens?

BY SAMUEL SIMMINS.

In my 1888 edition, and in each succeeding issue of my book, I stated that "unrestricted or indiscriminate swarming is totally at variance with all true principles of breeding. To obtain the best results it is absolutely necessary that all queens be carefully bred from the best stock only."

I believe most advanced bee-keepers are now agreed upon these points; but many do not follow the plan set out in the last sentence. It will be observed that all queens are to be reared for the season from one stock, or, to be more explicit, from just one queen only. In my own practice I go further than this, for, while breeding the whole of my queens for any one season from one selected queen only, I also rear my drones for the same period from the daughter or granddaughter of one other queen which was used for producing the queens in some preceding year. In this way I have been able to register a pedigree strain for the last ten years through the male parentage as well as the descent of the queen-rearing mothers, thus securing all the most desirable traits in a fixed strain of honey-gatherers.

Thus, if once in two or three years I find one among a number imported has some very desirable trait worth appropriating she is used for rearing queens one year, and in succeeding years her granddaughter, whose parent and grandparent were also mated to my pedigree drones, will carry the combined qualities forward in the male line. In occasionally bringing in one of my own home-reared queens, already in the line of pedigree stock, as a queen-mother for the season, she has been under close observation for at least the whole of one season, or it may be between two and three seasons, maintaining certain good qualities without variation. The practice of allowing bees to swarm, and leaving their own selection of young queens to follow, is as bad as that of allowing stocks to supersede queens at their own sweet will. Moreover, in the average apiary drones are allowed to be reared in a number of stocks, while queens are bred from several mothers during the same season. No wonder, then, that the apiarist, whether he be a honey-producer or queen-rearer, is pretty much at a standstill, or finds his stocks sometimes just a little better, or more often a great deal worse, than the average.

I am able to state from long experience that there is no hope of securing genuine

progress as regards standard breeding stock, and hence, for all purposes, where more than one queen-mother is used for the season, or more than one other queen for drones during the same year. Furthermore, that no fixed strain, having all-round desirable traits, will be secured where the pedigree is not definitely registered through the drone-mother succession, even more than by the registration of the queen mothers, though that, of course, can not be neglected.

AIDS TO ISOLATION.

Now, is isolation on some island, or within some large unoccupied area, really necessary? The unoccupied locality might be difficult to find, or, if found, would perhaps be inconveniently situated; while a small island would probably be equally inconvenient, possibly a very windy spot, and at the same time the bees would most likely require feeding all the time with both syrup and artificial pollen. This process would not only be costly, but certainly productive of negative results.

But as a matter of fact, where the queen-rearer has determined to use only one queen for the males, and one for producing his queens to mate with those drones, then I am assured he has already started on the right road—toward isolation. That is his first step, and thereafter he will know just what drones his queens have mated with, as I have already proved in my own experience. Presuming the rearer is using Italians he will produce drones quite different from any in the neighborhood; and if his selection has been made on the right lines, any ordinary Italians or mongrel drones that may exist near him will not be so strong on the wing as his own, and therefore he will have but a small proportion of mismated queens, and certainly not enough to account for the expense or inconvenience of setting up an isolated or island apiary.

DEFINITE CONTROL AND SELECTION OF DRONES.

But suppose I told you I had already a method of actually controlling the act of mating, do you think I would try to mate a queen to just one selected drone, or one in ten, or even one in twenty? Does the reader not imagine that the very drone the apiarist would himself pick out might be less fit, less hardy, less virile, than fifty others? No! I would allow the queen to have the choice from at least fifty to one hundred males in full flight (from my selected drone mother), when the chances are she would mate with the best—the most hardy, strong-winged, and fully virile male in fifty or one hundred, as the case might be.

I do not imply that, in ordinary circumstances, the breeder will leave for open flight the whole of the drones his best queen may be able to produce at the expense of normal stores; but that he will constantly be weeding out such as do not appear to him to conform to the type he is striving to maintain.

With regard to the definite control of fertilization, I may say this has been the dream of my many years of experimental and practical bee culture. Fertilization by hand and mechanical means I have tried with untiring patience, but without much success hitherto; and in years gone by the process was repeatedly conducted at my apiary in the presence of the late F. R. Cheshire, who was able to report a partial success resulting from one of my experiments.

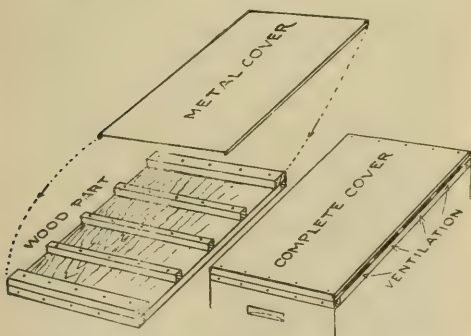
The flight of drones and queens in confined areas has also given me much unprofitable occupation, except that such experiments may at last have led me to the real solution of the whole problem, as I can now see quite clearly just why all such trials have been doomed to failure. I hope to refer again to this most interesting subject at no distant date.

Heathfield, Sussex, Eng., Dec. 20, 1909.

A FLAT, METAL-ROOFED, VENTILATED COVER.

BY WESLEY FOSTER.

The needs that brought about the design of this cover were these: A cover that could be made at the local planing-mill; one that would be cheaper than those regular styles manufactured; one the wind could not blow off easily, and a cover that would turn the rain, protecting the sections during the heaviest rainstorms. Wooden covers warp



and check so much in this climate that nothing but a metal-roofed cover will stand any term of years.

This cover consists of ten pieces—nine of wood and one of sheet tin, iron, or galvanized iron to shed the water. First there are the two main cover-boards, an inch and a half shorter than the length of the hive, and their combined width just the width of the hive. Then there are two strips $\frac{3}{4}$ inch wide, each, that are nailed across the ends, making this cover-board with strips just the length of the hive. Next we have two strips of inch stuff two inches wide and the length of the width of the hive. These are nailed on the top at each end into the ends of the cover-boards. These top end-strips, with

the $\frac{3}{4}$ -inch end strips underneath, make the ends doubly strong, as they are nailed across each other, giving almost the strength of a dovetailed corner. The three pieces left are $\frac{1}{2}$ inch by one inch, and the length of the width of the hive. These are nailed across equidistant between the end-strips on the top. When these five strips are all nailed on, the metal roof of tin or galvanized iron, folded over each side $\frac{1}{2}$ inch, is nailed on. The metal is cut just the length of the hive, and does not fold over the ends. These five strips raise the cover an inch from the wood, giving this much air-space; and if upward ventilation is wanted, a hole, say one inch by two, may be cut in the center of the wood part of the cover, and a piece of wire cloth tacked over. This will let any moisture from the cluster pass off. The metal folding over the side but $\frac{1}{2}$ inch gives a half-inch space along the side for the free circulation of air.

As to the cost, the lumber cost us 9 cents at one time and 11 cents the next. I think we shall have to figure on 11 cents hereafter. The galvanized iron costs 10 to 12 cents, already cut to size and folded ready for tacking on. By using a thin quality of plain black sheet iron the cost for the metal does not exceed three or four cents.

Mr. Oliver Foster is the designer of this cover, and makes it very nearly the same dimensions I have given. He uses a thin grade of black sheet iron, and merely curls the edges of the iron, so as not to leave a sharp edge that will cut one's hands. This gives the full inch or $\frac{7}{8}$ -inch open space clear along the side. We prefer the galvanized iron, as it is heavier, and one can sit down on the cover without bending the metal. The galvanized iron does not need painting, but will be somewhat cooler if a coat or two of paint is applied.

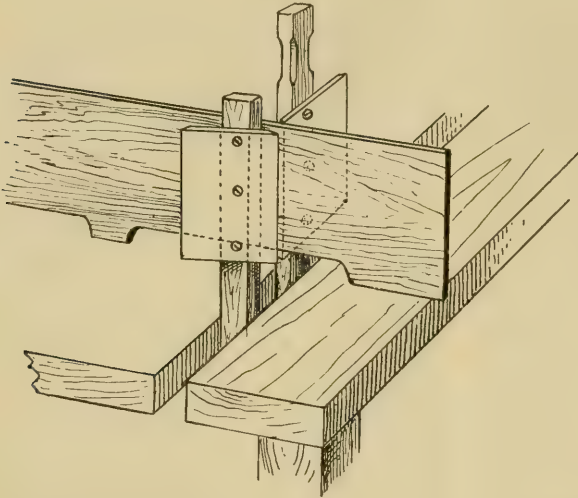
We like these covers very much, and have 200 of them in use, and shall have more as we need them, and as the other kinds we have wear out.

A SEPARATOR CLEANER AND SCRAPER.

We always cleaned our separators with an ordinary hive-scraper until we made this machine. A large sheet of tin was nailed on the top of our scraping-table, and the separators laid down flat on this tin when being scraped. The result was that many of the scalloped edges broke off in the operation, and the muscular effort required became very tiring when scraping was done by the thousand.

This little machine does the work in excellent shape if it is made right, adjusted carefully, and the operator understands it. The blades are made from an old saw, and are sharpened rather blunt, though not square, on the cutting edge. One of the blades is fastened solid, and the other blade hinges on to this stationary one. The bottoms of the blades come together within $\frac{1}{2}$ inch, just the thickness of a separator. The blades are set to each other at an angle of 45 degrees, giving a strong and sure cutting power when the blades are brought together

with the hand lever, which is attached to the hinged blade. We tried a spring for holding the blades against the separator, but found that some needed more pressure in cleaning than others, and so adopted the hand-lever plan, which works very satisfactorily. The separators are fed into the machine against the 45-degree angle of the blades, and the pressure on the hand lever is applied when drawing the separator through between the blades. This cuts the burr combs and propolis off better than any method we ever used before.



Two operators are required—one to feed and pull the separators through, and one to work the hand lever; but with this little machine we can do at least twice the work that two men would do with hand scrapers.

We made several of these outfits before we got one that would work well under all circumstances. The machine requires a little practice before one can do good work, but it saves much muscular effort, cleans the wood well, and does not break the scallops as often as when working by hand.

Boulder, Col.

A SAFE PLAN FOR INTRODUCING WITHOUT WASTING MUCH TIME.

Forming a Nucleus Beside the Colony whose Queen is to be Replaced and Running the New Queen Directly into the Nucleus.

BY W. L. COUPER.

Of methods of queen introduction there is no end. They all seem to work all right—sometimes. That none of them are without fault seems to me proven by the fact that, every year, new schemes or old schemes renewed are put forward by enthusiastic experimenters. Of course, there is the one infallible way given in all text-books; but it

entails too much work for use except in the case of a very valuable queen. Alexander's method, by which he used to introduce either one or a number of queens to the same colony, is open to the same objection. Probably the great majority of bee-keepers use the ordinary method printed on queen-cages; but if their experience is the same as mine they lose a considerable number of queens.

There is a well-known method of stopping robbing in spring by placing the robber colony on the stand of the robbed, and *vice versa*. The robbed colony is almost certain to

be weak, and it will receive practically all the field bees of the robbers. Why don't they kill the queen that is strange to them? I don't know; but the fact remains that they accept the situation quite tranquilly. On this fact, and the other fact that it is quite simple to introduce a queen to a properly made nucleus, depend my method of introduction, which I call the substitution method.

To make nuclei for this purpose, frames of brood should be placed above an excluder for nine or ten days. Take four of these frames and place in a hive, filling up with empty combs. Make sure there are no queen-cells in the brood-combs. The morning of a fine day is the best time to do this, as the field bees will return to

their old stand. Place this nucleus-hive beside the one whose queen is to be replaced. In the evening run your new queen in at the entrance of the nucleus-hive. She will be quite safe. As soon as she is laying, her hive can be placed on the stand of the one containing the useless queen. This should be done in the evening, so that the field bees come to their new queen gradually the next day.

The experienced bee-keeper will have no difficulty in disposing of the frames of brood when he has killed the old queen. There is always a place for them. To the beginner I suggest that he can employ these frames for strengthening weak colonies, for making fresh nuclei by placing them above an excluder, or he can return some of them to the colony with the new queen.

An objection that is sure to be raised to this plan is that it takes too much time and work. Let us look into the thing. By the ordinary method you have to hunt up and kill your old queen. In a full colony, that is sometimes quite a job. I think that, on the average, I could make a nucleus quite as quick. Substituting the nucleus for the full colony, and changing the supers, takes only a minute or two. In either case you will have to look the colony over in a few days to see if the queen-bee has been accepted; but by my method, if she should have been killed you can return the old ones. I

do not claim this way to be infallible. Bees delight in breaking rules; but I have had no failures yet.

Cannington Manor, Sask., Can.

TEN-FRAME HIVE NOT WIDE ENOUGH FOR TEN FRAMES.

Sectional Hives not a Success.

BY S. KING CLOVER.

I notice that the ten-frame hive is being discussed. I like the ten-frame Langstroth hive of the regular depth, or even deeper. This hive as now constructed is somewhat faulty, not having been brought up to the high state of perfection that the eight-frame L. is. The fault is that it is not wide enough to permit the proper handling of the frames after being coated with propolis at contact points, although I persistently scrape this off. The ten-frame L. has no provision for a follower, and the space is too great for nine frames and a follower. The extra room in the eight-frame L. hive for followers, etc., is about right. Too often have I tried to remove the outside frames, only to find that they were too close to the hive walls, and that the bees had built them fast with brace-combs or propolis. Another defect, on account of room, is that the bees neglect these outside combs and rear little or no brood in them. I am compelled, in removing frames from the brood-nest, to dive in wherever it looks as though I can get a comb out easily, and I do it in fear and trembling lest I roll a valuable queen between the frames. The ten-frame L., if perfected, will be about as near perfection in hive construction as it is possible to obtain. In calculating inner width I would first tack a piece of thick section stuff, $\frac{1}{8}$ or $\frac{1}{16}$ thick, by $\frac{1}{2} \times 3$ or 4 in. long to the side of the hive for the V and square edges to strike against, insuring a sufficient bee-space at all times on that side of the hive. Then I would fill the hives with frames and add a trifle ($\frac{1}{8}$ inch) for propolis that seems always to be with us, and sufficient room for a follower. I have tried the shallow or sectional-brood-chamber hives for two seasons, both as hive-bodies and extracting-supers, but I can not get the good big colonies in them that I can in either the eight-frame Langstroth-Danzonbaker or ten-frame L. hives, nor results.

I can not sit still when I read these articles advocating the sectional-brood-chamber hive. I have little fear for the experienced bee-keeper; but I do feel for the beginner and those not so far up the ladder of experience as they may be. I always thought that the old Gallup frame, $11\frac{1}{4} \times 11\frac{1}{4}$, turned out more bees, bigger swarms, stronger colonies, in less time than any other frame it has been my lot to handle, and it is square. Then when it comes to extracting shallow frames a four or five ton flow will keep one busy about three weeks. However, I have naught but kindness for the ad-

vocates of the shallow frame and divisible-brood-chamber hive.

By the way, can we not have something on the line of a large upholstering tack, or something of that nature, that can be driven through the bottom of the end-bar to help keep the frame square, and prevent killing bees when we stand a hive on end? An ordinary staple will not do, as it will split the wood or be forced clear through it. Something with a round head $\frac{1}{8}$ or $\frac{1}{4}$ inch thick, with a central nail or brad, which can be clinched inside is what is needed.

Mabton, Wash., May 5.

[One of our readers has sent us a stamped "button" that looks as though it might be a good thing to use in this way. We will have an illustration of it in an early issue. —Ed.]

ARE BEES SEMI-HIBERNATORS?

Some Evidence to Prove that they are Not in the Real Sense of the Word.

BY J. E. HAND.

Mr. Editor:—Your theory, page 35, Jan. 15, that bees are semi-hibernators, seems at first sight quite reasonable; however, when we consider the full meaning of the word "hibernate," evidence is lacking to prove that bees are in any sense true hibernators or even semi-hibernators. The fact that bees contract down to a small bunch for mutual warmth is a direct contradiction of the hibernation theory, for hibernation and heat are not analogous terms.

Your statement that bees take no food while in this condition is only guessing, and would seem to be contradicted by the fact that bees wintered out of doors in unprotected hives consume twice as much stores as when wintered in a warm cellar. Did you ever see an animal or insect in a state of true hibernation? If you have you will know that they are dead so far as power of motion is concerned; and that while in this catalytic condition frost and cold seem to have no bad effect upon them. In this condition they pass the entire winter without taking food and awaken at the approach of a certain temperature of heat and by no other means.

It is true that an isolated bee will become stiffened with cold at a temperature of 40° on a cloudy day; however, while in this condition I have not found that they are able to abstain from taking food any longer than when in a normal condition, nor are they able to survive a temperature below the freezing-point for even a few hours. If the entire cluster falls into this helpless condition their doom is sealed unless they are subjected to a higher temperature before they starve or freeze to death. If further proof is wanted, just poke into the winter cluster of a colony of cross hybrids on a cold day and you will be in position to receive evidence of a convincing nature that hy-

brids, at least, are very much awake *all* the time.

I believe the instinct of bees to huddle together for mutual protection against cold is a fruitful source for the development of scientific methods of wintering bees along new lines, and I am now conducting experiments along lines touched upon by Dr. Miller's Straws, p. 36, and your reply to it. Dr. M. is right about combs full of honey and a big space below the frames. The editor is also right in thinking the frames should be shallow. It has not yet been proven to my entire satisfaction that bees will winter better in frames 12 in. deep with empty cells for a winter-nest than they will upon combs of solidly capped honey 5 in. deep with a space of 5 in. below them, either for outdoor or indoor wintering. It begins to look as though the successful wintering of the future will be conducted along this line.

Birmingham, Ohio.

PAINTING HIVES.

The Bees Paint the Inside; Man should Paint the Outside.

BY DR. A. F. BONNEY.

Once upon a time, when I knew a little less about bee-keeping than I now do, I wrote the editor of GLEANINGS asking him if I should paint the inside of my hives. His reply was that the bees would attend to this, and I think he was quite right, for I have been looking over some hives which have been in use one and more years, and I find them coated inside with wax or propolis, or both, until, I should judge, they are utterly impervious to moisture.

This is to be expected, for I have in time past noticed that the cavities in trees from which I have taken bees were plastered with waterproofing; and if it had not been done, the bees would have had a cold wet place in which to live, instead of the warm dry place; for the tree-nest is warm, and it is dry, and, to all intents and purposes, the hive is too, although, having a flat top, the moisture will not so easily run down and out as from the tree cavity. That the inside of the hive gets wet, and even moldy, is more the fault of the shape than any thing else; for, given a chance, the water would fall and work its way out, just as the carbon dioxide does, evolved in considerable quantities by the bees in the act of breathing.

Such being the case, that the inside of the hive is waterproof, what becomes of the argument that, to paint a hive, makes it wetter inside? There is not a bit of doubt that a white hive, ventilated at all, will in summer be many degrees cooler than one alongside of it not painted; for, the darker the wood the more heat there will be absorbed; and as to cold weather, the color of the hive has little to do with inside heat; for if a single-walled hive is left on a summer stand it will be protected; and if cellared it needs none.

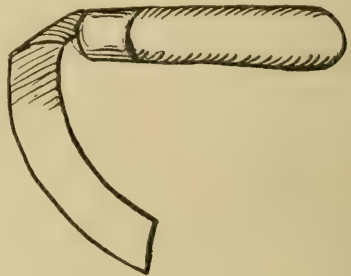
If a chaff hive is used, color will have no effect excepting, possibly, black, which might cause enough heat to be absorbed to raise the inside temperature, though I doubt it.

If Dr. Miller or any one else has unpainted hives, being financially able to paint them, it shows that his bump of beauty-love is undeveloped; for a hive is like a house—much better looking for a couple of coats of nice white paint. I came near saying white-lead paint, for that is the only thing suitable to use, although, having been saponified by the action of the atmosphere, it will rub off in time, which, to my notion, is better than having it peel off, as the zinc-lead heavy spar compounds will. A painted hive is like a painted house. It looks nicer, is cooler in summer, will last twice as long for the paint, and the lumber is not so apt to warp. To my notion there is every argument in the world in favor of painting hives, and not one against it, except here and there an example of individual taste. For the sake of the elevating tendency of beauty, if for no other reason, let us paint our hives.

Buck Grove, Ia.

A Short Cut with Half-filled Sections.

The clover season closed this year abruptly, owing to the drouth, and the result is I have a large number of half-filled sections to be disposed of. It is useless to put them back on to be finished, for if the bees touch them at all it is only to round them off before they are filled out. It is not judicious to put them away unsealed or into jars, for fear some will sour. I use frames for baits instead of sections, *a la* Townsend, because when old sections are used the bees thicken the comb before refilling, making an unsalable section. To take out the sections and replace them in specially made frames to be extracted is a long tedious job; so, being inclined to save labor, I took some lath, smoothed them a little with a block plane, cut lengths the same as the bottom of the section-holders, and was ready to work,



Taking a frame filled with sections I tacked a lath over the top, squeezing the end pieces together as I drove the last nail, each being put in about half its length. Then, uncapping with a special knife, I ran them through the extractor, then removed the bar to be applied to another holder. The sections were put into a box as fast as extracted, and set out to the bees.

I append a drawing of the knife I use. It is a paring-knife with a five-inch blade. One bent at right angles might do as well; but this one serves my purpose. There is wax and propolis enough on the sections to keep them from falling out of the section-holder, held as they are by the bar.

I use the Danzenbaker hive and supers. I fancy a little ingenuity will enable one to adapt this plan to any kind of section which is held in a holder.

Buck Grove, Iowa.

A. F. BONNEY.

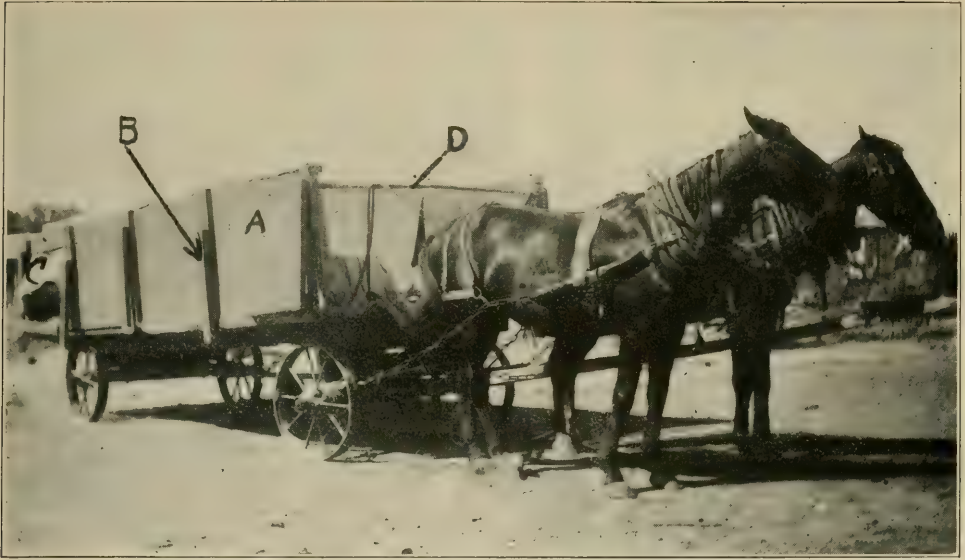


FIG. 1.—COLLAPSIBLE HONEY-HOUSE READY TO MOVE.

A is a hinged apron, 3 x 16 ft., which lets down by loosening the cross-bar D and a corresponding one behind. B is one of the five hinged legs which automatically swing out to form supports for the apron A when it is let down to form part of the floor of the house. C is an opening in the apron, which holds the gravity strainer by a rim around the top of it. Two 850-lb. ponies can pull this outfit over almost any road. The outfit contains a complete power-driven outfit for extracting honey on a large scale. See Fig. 3. Two men in five minutes can raise this outfit into a 12 x 16-foot house with eight-foot walls. The running-gear that the wagon is built on costs \$35.00 laid down in New Mexico. Planned and built by O. B. Metcalfe.

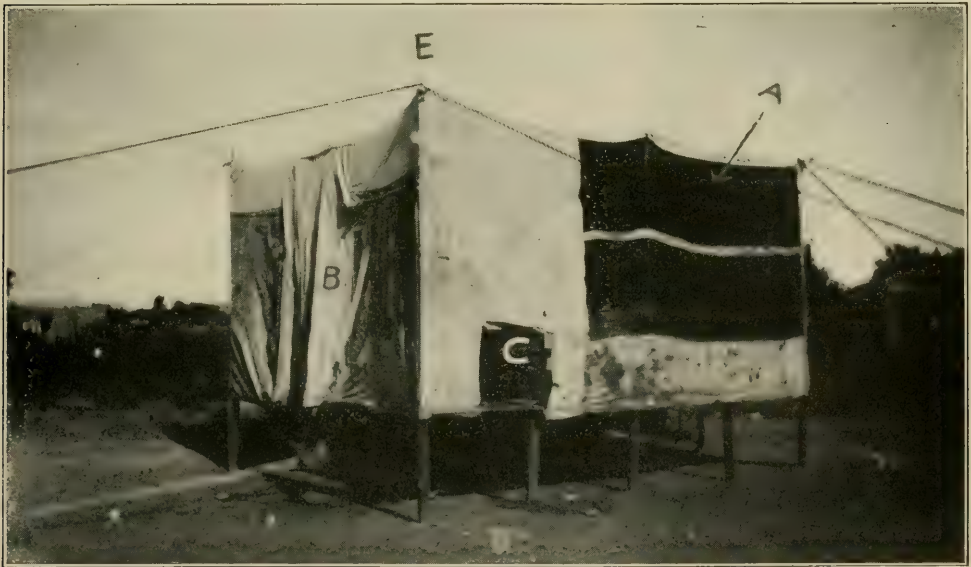


FIG. 2.—COLLAPSIBLE HONEY-HOUSE READY FOR USE.

A is a screen window 10 x 6 ft. Another, the same size, on the opposite side, gives good ventilation, and attracts robbers so they bother but little around the doors. B is the main entrance to the house. It is of 12-oz. duck, as are all the rest of the walls except the screen windows. C is a small trapdoor where the honey is passed in. A canvas flap closes it. The iron pins, as shown at E, are driven into the removable uprights. These uprights are lifted out of a half-inch socket at the bottom, and pulled out of the loops at the top, leaving the whole thing collapsed ready for the two aprons to be lifted up and fastened. Two men can do this in five minutes, and then it is ready to drive off. This honey-house on wheels has a floor space of 12 x 16 ft., and walls as high as desired. The walls shown are 8-ft. high.

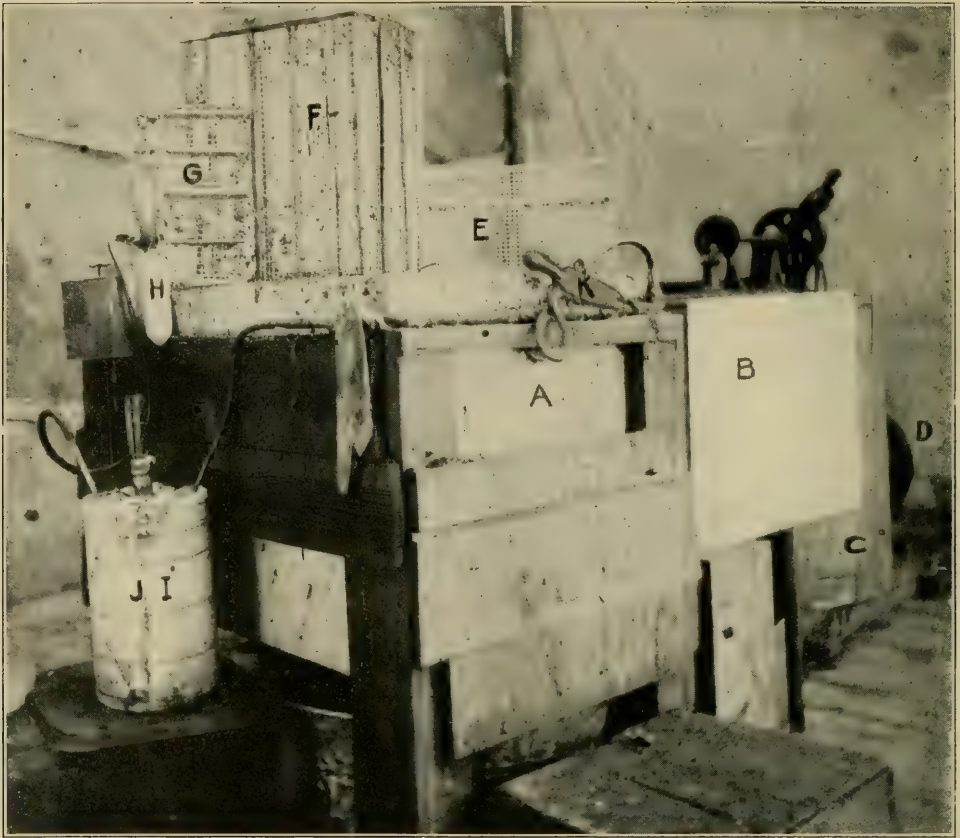


FIG. 3.—VIEW INSIDE THE HONEY-HOUSE.

A, uncapping-can (see page 515, Aug. 15); B, comb-box; C, 8-frame extractor; D, fly-wheel of 2 H. P. two-cycle Detroit engine; E, screen bottom for comb-box B; F, one of the four baskets which exactly fill uncapping-can A, and allow drainage in all directions; G, sliding bottom of basket, left loose to shove out uncappings when the basket is taken out and inverted; H, small boiler with six one-inch flues to generate steam for the steam-heated uncapping-knives H, K; J, water-gauge on boiler. This cut shows an outfit with which three men can uncup and extract medium thick honey at the rate of 1200 lbs. per hour.

A LARGE HONEY-HOUSE ON WHEELS, FOR OUT-APIARY WORK.

Extracting Honey on a Wagon at the Rate of 1200 lbs. per Hour; the Gravity Strainer Not a Success for Rapid Work.

BY O. B. METCALFE.

The honey-house on wheels, shown in the accompanying illustrations, seems to me to be a practical outfit for a large honey-producer with several out-apiaries. We have used it this season, and would not go back to the plan of unloading and loading the outfit at every yard.

Fig. 1 shows an opening in the apron for a gravity strainer; but we did not find the gravity strainer satisfactory for our work. If any one is figuring on making a gravity strainer I think he would do well to set out a tank of his honey, and time it to see how long it takes to settle. If it takes ten hours to settle as clear as he wants it, and he can

use one that holds as much honey as his extractor will throw running all the time in ten hours, it will work. Otherwise the current will be so swift that it will carry the trash with it clear to the gate. That is, if I am right in my understanding of the method, the tank must be large enough so that a certain amount of honey coming from the extractor must take as long to get to the gate as it would have taken it to settle. I mention this because, if I had read a similar statement, it would have saved me seven dollars and a lot of time.

A SPECIAL BOILER FOR THE STEAM-KNIFE.

We now endorse the steam-heated uncapping-knife, but we could not use it for fast work until I got to work and made a regular boiler with flues which would hold in a pressure of perhaps two pounds. On trying to use it at first we used a steam-tight bucket without flues on a single-hole-burner gasoline-stove, but could not get heat enough to carry the knife quickly through a solid

capped comb of thick honey. The boiler shown in Fig. 3 has an asbestos covering to hold heat, and the one-inch flues which come through it from the bottom to the top are partly covered with strips of tin so the heat from the gasoline-stove is forced to spread around a little and enter all the tubes. The water-gauge I put on after the boiler went dry once, and the solder was melted. The boiler is made of No. 40 galvanized iron with galvanized iron pipe soldered in it for flues. It consumes nearly a gallon of water per hour; and if an air-cooled engine were used the boiler would have to be larger than the two-gallon size, for in our case we can dip hot water from the engine-tank to fill it, and within a minute or so it is boiling again. Refilled with cold water it would take it about ten minutes to boil again. This boiler does not sit flat on the stove, but has the bottom soldered in it about $1\frac{1}{2}$ inches from the bottom to catch the heat so it will not spread out and come up around the outside.

Mesilla Park, N. M., Aug. 6.

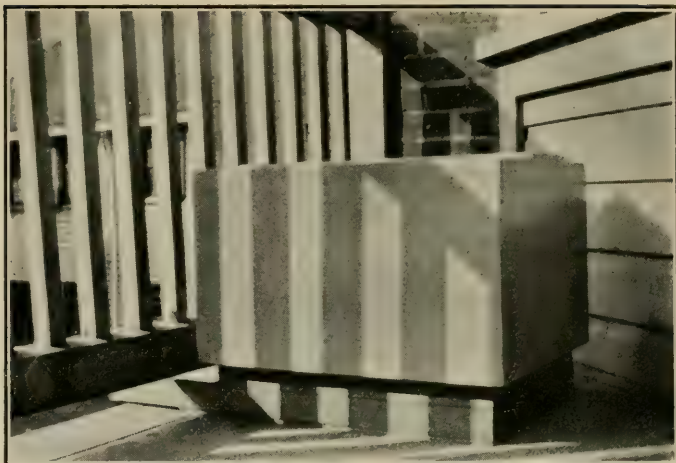


FIG. 1.—A COLONY PACKED FOR WINTER ON THE BACK PORCH OF A DWELLING-HOUSE IN PITTSBURG.

A BACK-PORCH COLONY IN PITTSBURG.

BY R. M. M'CULLOUGH.

The first illustration shows my colony as it went into winter quarters last fall. Over the brood-chamber I placed an escape-board with the rim side down, the escape being removed and the hole closed with a suitable block. A super filled with chaff was placed over this, and a deep telescoping cover placed over all with padded sticks at the

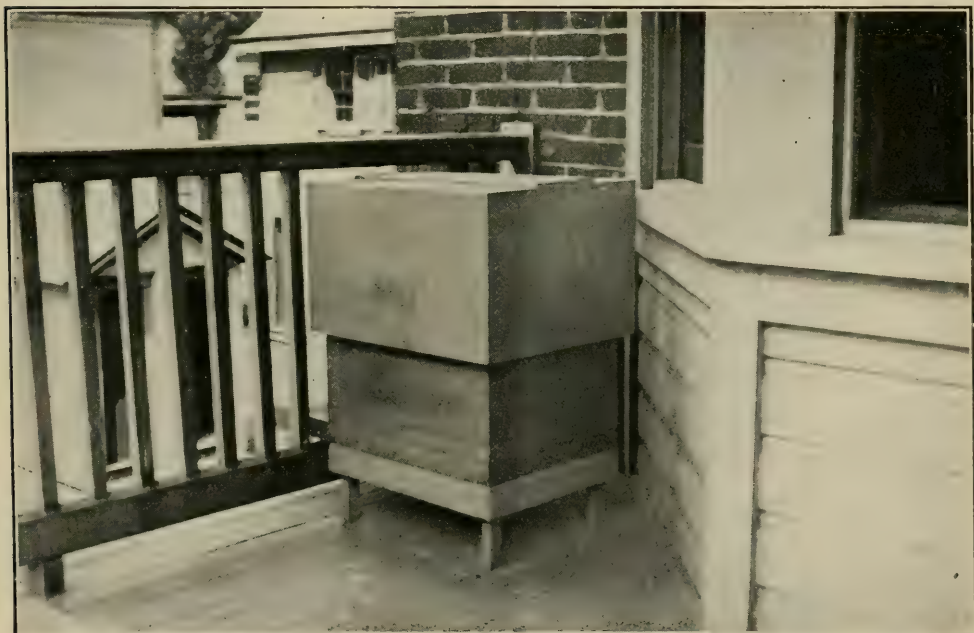


FIG. 2.—THE HIVE RAISED TO PERMIT THE ALIGHTING-BOARD TO EXTEND OVER THE PORCH RAILING.



FIG. 1.—PERCY ORTON'S CAPPING-MELTER READY FOR USE.

lower edges, making every thing tight, and leaving a $\frac{1}{2}$ -inch dead-air space all around the hive. In spite of the fact that there was a great loss of bees in this vicinity last winter, this colony lost by actual count 140 bees in December, 125 in January, 134 in February.

This spring I placed the hive on a stand, as shown in the second view, as the bees were annoyed by the bottom of the porch railing when the hive was located as in the first view. At this writing, July 15, there are two supers on, the bees already working nicely in the second super.

Pittsburg, Pa.

HUNTING COLONIES IN TREES.

Transferring from Trees into Modern Hives.

BY BERT ROBERTS.

Hunting large game in the mountains is great sport; but hunting bees is ahead of all other kinds of hunting. I wish that some of the readers might be here to go with me, for it seems as though every tree having a hole in it contained a colony of bees. They are usually found in oak-trees from ten to

forty feet from the ground. I never line bees with a bee-box. I just go through the woods and find the bees flying in and out of the trees. I have run across as many as four trees in half a day.

When a tree is once found I carry a hive, some pails, and a smoker to the spot, and then proceed to climb the tree by nailing strips of boards on the trunk so as to form a ladder. When the opening is reached I build a platform by nailing a board four or five feet long on each side of the tree with braces from the ends down to the trunk. Over these boards I lay pieces of strong bark or more boards. When this is done I lower a light rope for an attendant to tie on a smoker, an ax, and the pails. I blow a very little smoke in at the entrance, and begin chopping. When the cavity is reached I use a little more smoke, and then with a long-bladed knife cut the combs loose from

the tree and remove them, brushing the bees back in the cavity. I usually put the honey in one pail and the brood-combs in another. After the combs are all out of the tree I pull the hive up to the platform and transfer the brood-combs into the frames, holding them there by means of sticks on each side of the frames, the tops and bottoms of the sticks being tied together to hold the combs in place. The hive is then set on the platform, near the opening in the tree. After washing the honey and dirt off my hands I carefully reach into the cluster and take the bees out by the handful and dump them on to the alighting-board of the hive. A paddle or large spoon might be used for this purpose, but there would be more danger of hurting the bees. They find their own brood in the hive, and run in at the entrance like sheep into a barn.

The few remaining bees in the tree may be smoked out and then the cavity plugged with moss. Every thing may now be left until evening, and then the hive carried home and placed on the stand that it is to occupy.

The native bees of Oregon are fair-sized and brown in color, and are not so likely to sting as the natives of Michigan,

Sheridan, Oregon.

ORTON'S CAPPING-MELTER.

Made from a Single Sheet of Galvanized Roofing Iron.

BY PERCY ORTON.

The three illustrations show a capping-melter that I have been using for two seasons. It is made from one whole sheet of galvanized iron roofing. I cut the sheet, which was 96 inches long, in two pieces of equal length, and made two pans 18×40 inches. The upper pan, as seen in Fig. 3, slips into the lower one, and projects about two inches beyond the lower pan as an outlet for the honey and wax, the lower pan being soldered to the upper one at this end.

Fig. 2 shows that, by projecting the upper pan beyond the lower one, I get a space large enough at the back end of the melter to hold two honey-knives to heat in the hot water of the lower pan.

Fig. 1 shows the melter in running condition, and my son, Master Darius Orton, age 9, who is a very good helper for his age.

This melter will hold 30 Hoffman frames, and is useful in warming up combs of honey in cold weather. Two uncappers can



FIG. 2.—INTERIOR OF ORTON'S CAPPING-MELTER.

Two shallow pans were made of a single sheet of galvanized iron, and the upper pan soldered to the lower, leaving a space for hot water between.

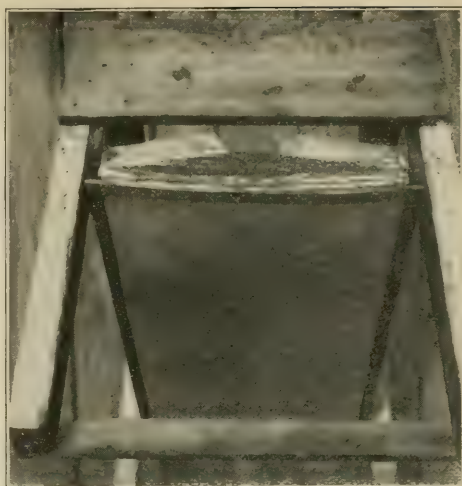


FIG. 3.—UNDER VIEW OF CAPPING-MELTER, SHOWING THE UPPER PAN PROJECTING BEYOND THE LOWER ONE.

work, and the machine will take care of the cappings; or if one does not care to extract more than 50 hives a day it will hold the cappings so that they may drain over night.

The cost of the galvanized iron, solder, and lumber, was about \$1.75, and I did the work myself. I find after two seasons' use it is a very handy machine. It does not injure the honey, and produces very fine wax.

Northampton, N. Y.

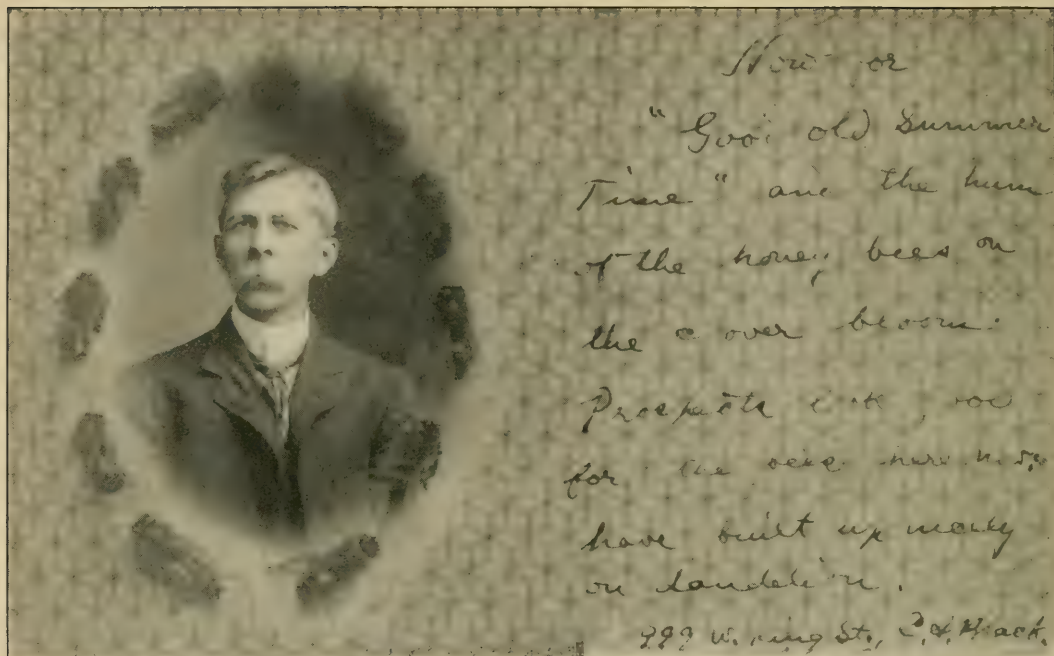
[Reference to the illustrations on pages 555, 556, Sept. 1, shows that Mr. Orton, two years ago, hit upon almost the identical construction of melter which we have been using this summer. We can endorse all that he says.—ED.]

NEW COMBS NOT NEEDED FOR THE PRODUCTION OF FINE LIGHT HONEY.

BY W. H. RAGAN.

In answer to Mr. Leon C. Wheeler's article, page 482, Aug. 1, I will say that I am a producer of extracted honey, and I find it no trouble to produce fine light-colored honey in old combs. And so far as honey being capped over in old combs before it is thoroughly evaporated, I doubt it very much, for I have kept such honey a year or more with no sign of fermentation. All of my honey is sold under a guarantee. I have been in the business about ten years, and have never had a dissatisfied customer, and have never had to make good a sale. The only advantage new combs have over old, that I can see, is that they are transparent, which enables one to sort the light from the dark honey more readily.

The demand for my honey has always been greater than the production, and I have



C. A. BLACK'S DESIGN FOR A POST-CARD.

tion's name to stand back of that honey, which it would not, if the producer or bottler were merely a member of the Association. The consumers want one company or some individual of responsibility back of what they buy. I have known plumbers and tradesmen, dealers, etc., to go together and advertise as a body, with the names of each appearing at the bottom of the advertisement; and from my observation this plan is not effective. As I said above, the consumer prefers to have one man or firm who will make definite statements concerning the product, and who will stand behind every such statement with a guarantee.

The grocers would call on the wholesalers, and the wholesalers would have to open up dealings with the nearest members of the Association, or with the ones who had the honey put up in the manner that the wholesalers' trade demanded. The diversity of packages, kinds of honey, and inability of the wholesaler to get honey of even grade and style of package is the greatest drawback to this method. I think twenty thousand dollars would be very largely thrown away unless there were a strong marketing company organized that would unify the efforts of individuals in the National Association or out of it.

Popular articles about bees in the magazines, articles on the healthfulness of honey in the daily papers, on the method of producing honey, and its freedom from adulteration in the grocery papers, all help to advertise honey. I know that the grocery

papers are glad to get articles descriptive of methods of production and preparation for market of any product that is sold in the stores. The sugar, coffee, cocoa, and the other manufactures, keep the grocery papers supplied with interesting descriptions of methods of production, which interests grocers, and they sell more of the goods if they can talk intelligently about them.

The furnishing of the grocery papers with descriptive material will be still more effective if augmented with advertising definite grades and kinds of comb and bottled honey in the advertising columns. The goods so advertised must be obtainable through the grocer's regular channel of supply, the wholesaler, to make this advertising effective. Advertising is not really effective unless the product can be easily secured. If one is close enough to be reached by telephone his chances of getting good results are better.

TRAVELING MEN TO SELL AND ADVERTISE HONEY.

Perhaps the most effective manner of advertising that will reach the wholesaler and retailer is by means of traveling men who thoroughly understand the product as well as the markets and the relation of honey to other sweets. Bee-keepers themselves are better equipped so far as the knowledge of honey is concerned; but few have had experience enough to be able to convince a man that he could profitably handle honey when he is not inclined to consider honey as a good thing for him to keep in stock.

repeatedly sold to buyers of California honey who afterward remained my customers. Most of my honey is put up in 1-lb. jars, which nets me $10\frac{1}{2}$ cents per lb. This should be sufficient proof of its quality.

My experience has been somewhat different from friend Wheeler's, in that I have always been able to get higher prices for my fancy honey at home.

Coming back to new comb vs. old, I will say I can extract old wired combs without damage to them, and also get more honey per comb than I can from the new, as the extractor can be run at a higher speed. Another advantage in having an abundant supply of combs on hand is that one is always ready for a sudden or heavy honey-flow, and bees that were building new comb or drawing out foundation could be otherwise occupied; the producer would save .55 cent per lb. on comb foundation every three or four years, to say nothing of the amount of honey required in drawing out the same. Siloam Springs, Ark.

[You have brought out a point that may explain why some producers feel that they must have new combs only for the best honey. It is true that, with old brood-combs, all honey looks dark; so if the locality is such that both dark and light honey are likely to be found at the same extracting, they are more likely to be mixed if old black combs are used.—ED.]

A SIMPLE ENTRANCE-VENTILATION METHOD.

BY LOUIS H. SCHOLL.

The writer believes in hive ventilation, but only at the entrance. Given at any other point it interferes more or less with the inside work of the colony, such as comb-building, the rearing of brood, and the storing of honey in proximity to any such opening. Then we do not believe in giving too much space, nor in methods that consume too much time to apply, or such as create an extra expense and extra labor also. Too deep bottom-boards come under the first head. Any method that requires blocking up at four corners, putting extra strips on the bottom-board, cleats, or reversing the bottom-board entirely, come under the next; and the expensive "racks," etc., to slide in deep bottom-boards, also expressly made for the purpose, or such contraptions as were recently illustrated in this journal, come under the third head. Why, just think of the man who counts his hives by the hundred or thousands, and—!

By raising up the front of the hive by inserting the hive-tool in the entrance, while doing some kind of work with the colonies, a small stone or piece of wood is placed in the middle of the entrance, as shown, and it gives us good results.

New Braunfels, Texas.

HOW SHOULD HONEY BE ADVERTISED?

The Importance of Having a Responsible Individual or Corporation Back of all Advertisements.

BY WESLEY FOSTER.

F. J. Root's plan of advertising honey through the grocery papers, page 410, July 1, would bring honey to the notice of wholesalers and retailers, and would help make sales; for the more the dealers can be induced to handle honey, the more it will be sold. There are many disadvantages to the plan of advertising nationally, unless there is a national honey-bottling company to take the honey of the members, say of the National Association, and put it up in uniform sizes, grades, and styles. Such a company or association would have to be organized to send salesmen throughout the United States, calling on wholesalers and retailers. Similar results might be secured by getting brokers to represent the association's interest in the large cities. These brokers sell to the wholesalers, and can often get an opening for a new brand or product, while a salesman unacquainted with the local firms might not.

Suppose the National Bee-keepers' Association should raise twenty thousand dollars for advertising honey in the grocery papers to reach the dealers, and in the popular monthly journals to reach the people—the consumers. The consumers would become interested, and would ask their grocers for honey put up by members of the National Association. They would want the Associa-



SCHOLL'S ENTRANCE-REGULATOR.

A small stone, quickly applied, gives good results in entrance ventilation.

There are bee-men who have the natural ability to convince a grocer of the value of honey as a profit-maker for him. Sincerity, directness, and a determined, positive attitude will get a respectful hearing in most cases. Besides these features, good tact in leading grocers up to a decision to buy is the other main essential. Prices should be at the tongue's end, and circulars with prices and illustrations of the different grades and sizes of honey-packages should always be left. One of the objections always met is that the grocer is not quite ready to order. What he means by that is that the salesman has not yet thoroughly convinced him of the value of honey, and he is simply trying to put off this salesman in order to get rid of him.

Selling by means of salesmen costs money, but it is the plan most likely to secure results that are tangible. The plan is advertising, just as a notice in magazines and papers is advertising. The form of advertising that is the most effective of all is a house-to-house canvass, at which time samples are given for the people to taste while the salesman is present. An order in most instances can be secured at once, which will generally run under one dollar each, according to my experience. When selling to retailers the sales average about four dollars in cities and ten to fifteen dollars in country towns where the ground is not covered so often. Sales to the wholesalers, of course, run higher—all the way from several dollars a month up to five hundred, according to the way the wholesaler's salesman push the honey among their retailing customers.

I am not much impressed with the idea of each individual selling his own product, unless he can get a very good price. A large bee-keeper can not afford to spend the time. Neither do I think that much can be accomplished by an organization like the National Bee-keepers' Association spending several thousand dollars in advertising unless it can have a regular business organization with a capital of \$100,000 at least to do business with. A start might be gotten with less capital; but the benefits to the bee-keeping industry of the whole country would not be appreciable until every large market was supplied with the product put up by the Association. Perhaps the Colorado Honey-producers' Association might be cited as a model for a national association. The Colorado bee-keepers (that is, the largest of them), organized about eleven years ago with but a very small capital to operate on, and now they have a sale for more honey than their members produce, and, consequently, they have to buy outside. Most of the wholesale houses of Colorado carry their line of honey exclusively, and it would be difficult to find a town in the State where their honey is not sold. This business was practically all built up through the salesmen of the wholesale houses carrying samples and price lists along with their other samples and literature.

Boulder, Colo.

TWELVE-FRAME HIVES PREFERRED BY ONE WHO HAS ALWAYS USED THE EIGHT-FRAME.

The Eight-frame Hive for Honey-production a Step in the Wrong Direction.

BY GEO. SHIBER.

There seems to be a strong tendency on the part of bee-keepers toward a larger hive than the eight-frame. Perhaps the majority are using ten-frame and some the twelve-frame. What I shall say on this question is from the standpoint of the extracted-honey producer. It might not apply to comb-honey production, and yet it might.

I have tried a few twelve-frame hives this season, and I find that they "deliver the goods;" and I am not sure but that, if I were to start anew, the twelve-frame would be my choice. Mr. Holtermann has said that, if there was one thing in bee-keeping that he knew, it was that the queen would more readily spread the brood-nest sidewise than she would extend it into a second story. He is just right, I believe; but there is another point to be taken into consideration. Let us take an eight-frame hive for illustration. The colony in it has wintered well; and as fruit and dandelion bloom come on, the bees soon need much more room, so another story of combs is added. If the colony is very strong the bees will soon occupy it, and later on the queen will lay in the bottom part of these upper combs. During all this time a colony in a twelve-frame hive would be getting ahead of this one in the two eight-frame bodies. One reason is, there is always a crack at the joints between the two bodies. This may be seen, even in a new hive; and an old hive, no matter how well it has been scraped, will show it a little more. The crack lets in the cool night air—a condition which does not exist in the twelve-frame brood-chamber, where no air can get in except at the small entrance, thus permitting the queen to extend the brood-nest with the smallest number of nurse bees.

I have several hundred eight-frame bodies that I have had for some years. They are in good condition, and I can not afford to throw them away. I started to use them in the latter part of the 80's, when that size seemed to take best in the bee-keeping world. Judging from events since that time, the manufacturers were forced to make and give prominence to the eight-frame hive; but I believe this was a step in the wrong direction.

This is the way I am using the eight-frame hives in extracted-honey production, and I find that they work all right: Suppose we have finished extracting about the last of July. Each colony is given another story of empty combs from the extractor. We now have two-story hives, each of which contains 16 frames, with no queen-excluder. When buckwheat blossoms, the bees will usually gather sufficient for winter; and the

weather being warm, and the force of bees strong, the queen is soon forced up into the second story, the bees gluing the two bodies together so tightly that there is no crack from the bottom to the top. The hive is carried into the cellar in the fall in just this way. Heavy? Yes, almost as heavy as a house.

We winter the colonies thus in the two bodies glued together. When they are carried out in the spring they have an abundance of stores and plenty of bees. No cold air gets in at the joint between the bodies, because there is no crack. I find that such colonies are the equal of those in twelve-frame hives for the honey-flow; however, the larger body is more satisfactory, and it is handier. In view of this, as I said before, I think I would choose the twelve-frame size were I starting with bees anew; but if one has eight-frame hives he can get strong colonies if they are managed as above described. A single body of eight or ten frames is not large enough for the average queen; but the twelve-frame hive furnishes capacity enough, except in rare instances.

Randolph, N. Y.

RAISING AND SELLING EXTRACTED HONEY.

BY C. A. BUNCH.

For the last twelve or fifteen years I have been trying to produce fine table honey, and I think that I have been successful. We extract the white honey about the last of July, and store it in tanks which hold 1500 lbs. each. We usually sell all the light honey soon after it is off the hives, except about 1000 lbs., which we keep to mix with our light-amber fall honey, which is largely from the touch-me-not. Our ripe basswood-clover honey is a ready seller; and the clover, basswood, and fall honey mixed make a blend that sells for the same price as the light honey. We extract the fall honey about the 15th of September. We got our first crop of honey-dew last season, and we sold it to a bakery for 3½ cts. a pound. We sell most of our honey direct to the consumer, my son and myself being the salesmen.

For the grocery trade we usually buy from 300 to 800 one-pound square bottles with corks. We get 15 cts. each for these bottles. By this plan we keep our name before the public. The bulk of the crop is sold in nine-pound friction-top tin pails at \$1.00 each, and also in one-quart Economic glass jars at 45 cts. each. We sell both the nine-pound pails and the quart jars direct to the consumer.

We have a one-horse wagon, with a board tacked on each side of the box, which reads, "Honey for Sale." In the city my son sells direct from the wagon while I visit the meat markets, express offices, barber-shops, clothing-stores, etc., with the large packages. We usually make another trip with bottled honey only, for the grocery sales.

My son and I made two trips to the city, each of which took a day's time. In all we sold 83 nine-pound pails, for which we received \$83.00, and 46 quart glass jars for \$20.70, the whole amount received being \$103.70. We think this is far better than buying the square 60-pound tin cans and selling the honey at 8½ cts. a pound. We live in the country, and sell produce; and my son usually takes the \$1.00 pails right along with him, and he sells from one to five each day.

Lakeville, Ind.

BEE-KEEPING IN ALABAMA.

The Possibilities of a New Part of the Country.

BY ERNEST RANDALL.

I started out last February by buying one swarm. I have divided, until now I have seven, all doing nicely. I use Danzenbaker hives. I also bought ten colonies six miles west of me, and now have thirteen there.

I am in the southwest corner of Alabama, six miles from the coast. I believe this will be a bee country in time. We have large titi swamps here that yield a large amount of honey early in the season. Then comes gallberry; and the bay-trees along all the streams bloom for several weeks; and now our clover will blossom till November. There will also be several hundred acres of oranges set out this winter. They will be four miles from here. We also have blackberries in all the swamps. The country is thinly settled as yet, but it is settling up fast by northern people.

I have a lot to learn; but some of the difficulties of the North, like wintering and spring feeding, will not worry us here, where bees fly every week in the year.

Grand Bay, Ala., July 23.

Sweet Clover in Washington.

This is an unusual season—very cloudy all spring until July 4; no lack of honey when it was clear for bees to gather it. The best honey-producers at that time were willows and a water-plant that grows best in two feet of stagnant water. After the Fourth comes alsike, which did well this year, outdoing the small white clover. Sweet clover will grow here on the dry spots of ground. It will never be a pest here if cattle can get near it, for they go for it in preference to other grasses or vegetables. They do not have to learn to eat it—not much—nor to be starved to it either.

I sowed a small piece of it in front of my house by the roadside. It did little more the first year than come up and be seen. The second spring it came up nicely, growing all right till the cows came along and chewed it down close to the ground. I intended to save a few plants by throwing an old Scotch harrow over a few shoots that failed, but the cattle "cropped it off" between the bars and killed it out. From my point of view the reason why cattle do not eat it in the East is because, under the climate and soil conditions there, it is seasoned too strong for their palate—a case of too much "pepper," if you like to call it so. Mix it with other grasses in the hay, and it will part with some of the "cumarin" and improve the other.

Lowell, Wash., Aug. 13.

WM. BELSHAW.

Heads of Grain

from Different Fields

A Bunch of Questions.

1. Will buckwheat yield nectar in a dry year? or when is it that it does not yield nectar?

2. Would you deem it advisable to make nuclei at this time of the year (Aug. 1)?

3. Do you know any thing about which will fly furthest in search of honey, of the following-named bees? Italians, blacks, or Banats. I see in your July 15th issue that a man in Texas claims that Banats are the only thing for long-distance flying in search of honey. What is your opinion of it?

4. Would not a four-inch space of chaff in a chaff hive be better for wintering bees outdoors here in Northern Iowa than two or three inches? or will it be injurious to have that much or a little more?

5. I used two Doolittle division-board feeders last fall and winter in a small colony, but the bees would make no attempt to get the feed; and the few that tried drowned in the syrup, which was made as you have directed. Now, could you explain why they did not use them, and tell how to prevent bees from drowning in the syrup when they try to get it?

6. Which hive, for all-around purposes, do you consider the best of the following: Danzenbaker, Massie, Heddon, or divisible? or alternating?
Swea City, Ia., Aug. 1.

ALBERT SWANSON.

1. Buckwheat will not yield as much nectar in a dry season as during a year when the conditions are more favorable. The quantity of nectar seems to depend more on the character of the soil and the actual temperature of the day than upon any thing else. In some sections of York State buckwheat nearly always furnishes a good supply of honey; but even then some years are better than others. In our own particular locality buckwheat yields only sparingly, although we always get a good crop of grain. In Northern Michigan and in Canada the plant seems to yield nearly as well as it does in New York.

2. We would not advise you to make nuclei at this season of the year unless you have had much experience as a bee-keeper. Better by far double up your weak colonies preparatory to winter.

3. We do not believe there is any difference in any of the races mentioned as to length of flight. The distance bees will fly depends largely on the source of honey and the lay of the land. When there is a heavy secretion of nectar, such as we sometimes get from buckwheat or basswood, bees will not go half as far as when the flow is light. For example, bees may go two or three miles from a moderate clover yield is on. When the yield is heavy, as from basswood, they will fly no further than is necessary to fill up quickly and return. In certain sections of the buckwheat areas of New York, bees will often fly five or six miles, especially if the flight is across a valley and there is no underbrush or trees in the way. We doubt if any bee-keeper has a strain of Banats or any other race that will fly further than other strains. It sometimes happens, however, that an individual colony of Italians, blacks, or some other race will fly further for nectar than some other bees of the same race in the same yard.

4. Yes, four inches would be better than two in Northern Iowa; but a hive with a four-inch space between walls is cumbersome and expensive. When a hive has to be made so large in order to keep the colony warm during winter it is better to winter indoors and use single-walled hives, both as a matter of convenience and economy. Where it is cold enough so that the temperature is, say, below the freezing-point continuously all winter, it is better to winter in some good warm repository, for the saving in stores if for no other reason.

5. Bees will very often refuse to take food out of a feeder after cold weather sets in, or during cool nights. If the colony is strong enough to keep up the internal temperature of the hive, it will take up the feed without hesitation. You probably fed when it was too cool. In a Doolittle feeder waxed all over inside it is advisable to use some sort of float. A stick a little less in length and width than

the inside of the feeder will answer very well. At one time Doolittle feeders were made by paraffining or waxing the whole inside. This made the inside surface so smooth that the bees could not readily climb out, and hence they drowned. The practice now is to nail the feeders up very carefully, and wax only the joints. Half a pint of melted paraffine is poured into the feeder, taking care not to wax the sides or ends—only the corners or intersections where the pieces come together. When the feeder is waxed in this way, no float is needed.

6. The choice of a hive will depend a good deal on general conditions and the man. The Massie and the Danzenbaker hives are much alike, and have about the same depth of brood-chamber. The Heddon and the divisible hives are practically one and the same thing. Not knowing the locality, the market, and the man we could not advise which hive to select.—ED.]

Claiming Damages from Foul Brood.

I sold bees and comb March 1, 1910, to —, after the bees were looked over and found to be healthy. I wanted him to look over the combs also, but this he did not do except in the case of one or two hives, and then took them; but now his bees all have foul brood. He says I deceived him, and has now put the matter in the hands of an attorney, claiming \$500 damages. The combs were healthy when he got them, I am sure. I am not a member of the National. Can I become a member yet? I know I am not guilty; but foul brood started among his bees, as it is very bad there. Can he force me to pay through the process of law? Can I not get some testimony that bees or combs may be healthy, and yet become foul a month later? After having bees five months he was well satisfied, but now is trying to make me pay, now that some of his bees are foul. About May 1st he wrote me to look the bees over again. I went there, and he had several combs of nice-looking young brood and new pollen; but by mistake he had taken the pollen for foul brood. All this young brood died, of course. Can it be that this looks like foul brood? Z.

[Without knowing more of the particulars we are unable to give you very definite advice. A good deal will depend upon what sort of contract you had; and if there is no contract in writing, whether there were any one person, aside from the contracting parties, who could testify to the condition of these bees.

One thing that will be in your favor is the fact that foul brood is very prevalent in and about —; and it would not be at all surprising that, if you sold healthy bees, they would develop foul brood in the locality where they were placed. The best thing for you to do is to make general inquiry as to whether foul brood was already present before you sold your bees. If you can show that there were diseased bees within half a mile, we will say, or even a mile, of bees that were sold, prior to the sale, the party could hardly claim that you sold him diseased bees, or at least he could not make out a case, in our judgment.

Then it is possible that his bees do not have foul brood at all. What he has may be nothing but dead brood. We think it would be advisable for you to call in your State foul-brood inspector. Let him inspect the bees and also give you a report of the condition of bees in and about — prior to the time of sale. The report that the foul-brood inspector gives you will have a strong bearing on the case.

You can join the National Bee-keepers' Association at any time; but the National has a rule that it can furnish no assistance in a financial way to one who has been sued for damages prior to his application for membership. But the National, we are sure, would be willing to render you advice. To that end we would refer you to General Manager N. E. France, Platteville, Wis.—ED.]

Is it Practicable to Space Closed-end Frames Wider Apart for the Production of Extracted Honey?

It requires rather more work than I care to do to produce comb honey, or at least entirely, and I am making arrangements to begin next season producing largely extracted; and as I have only the Danzenbaker hives, and have ordered more, I wish to know how I am to space eight frames to take the place of ten in my supers, for I have eighty of them

—the shallow, used in producing section honey. I might in time find some way to wide-space the Danzenbaker frames; but if you can tell me, why should I worry?

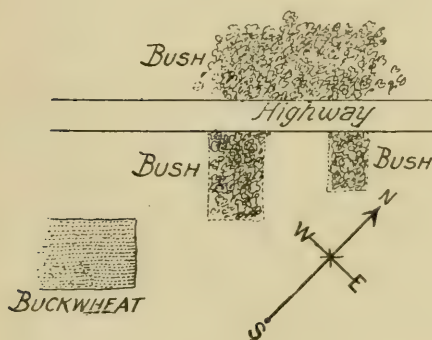
Notwithstanding I had many more bees to the colony May 1 than June 1 I have had good success—something like 1300 lbs. from 20 hives, spring count. I caught a few swarms in June, but it was so very dry that there was not much swarming. But two of my swarms made queen-cells.

If Mr. Townsend uses honey-boards and does not go near his outyards, how does he manage about the swarms which make queen-cells above the honey-boards?

I have 21 swarms over honey-boards, and have already found queen-cells. If this is to continue, and I have to look over all the supers to see if cells are started, it will mean considerable work. X.

[The Danzenbaker is more particularly a comb-honey hive, although it can be used for extracted. It would hardly be practicable to space eight Danzenbaker closed-end frames in a ten-frame body. The frames, as you know, would not stand up, but topple over against each other. We do not know how you could overcome the difficulty unless you made a sort of rake or comb, the teeth of which would slip down between the spaces between the end-bars of frames when spaced apart so that eight would just fill a ten-frame body. The back of the comb or rake should be made of tin, while the teeth should be square wooden pegs secured to the tin by means of one or two nails.

Mr. Townsend does not have any trouble with cells above honey-boards, but uses a different hive, the ten-frame Langstroth. The difference in climate, the difference in hive, and possible difference in management, may account for your differences in experience.—ED.]



A Buckwheat-Field that the Bees Found by Scent.

On page 230, April 1, J. L. Byer rather doubts that case of Mr. Thompson's regarding bees finding new pasture by scent. It was only last fall that I visited one of my outyards, and every thing was as quiet as could be; but next day every thing was in an uproar. A warm south wind was blowing at the time, and I was afraid they they were finding honey-dew in some place, because I was unaware of any buckwheat being within reach. This day I went home by the Lake Shore Road, and a farmer friend of mine hailed me and said that his buckwheat (12 acres) was alive with yellow bees, and he had not seen them until then. In the yard referred to above are the only Italian bees within six miles, and for them to get to that field of buckwheat they had to fly 1½ miles to a high timbered bush, and either go over the top or go roundabout, then cross a large field, then encounter another bush of high timber, then about another half-mile to the buckwheat—2½ miles in all. I am quite satisfied those bees would never have found that pasture if the wind had not blown the scent in the direction of the yard.

Burlington, Ont., April 18,

ISAAC BALMER.

Poor Success in Introducing a Queen to a Full-sized Colony.

In regard to introducing a queen to a full colony, p. 465, July 15, I am having Mr. Alexander's experience. A queen that I purchased and gave to a full colony three weeks ago is being superseded. How can I prevent it? I don't want the bees to raise their own queen, as the chances are she would not be purely mated. I was thinking of dividing the colony, leaving a few queen-cells below, and putting the queen and some young bees above with wire cloth between. Then kill the young queen, if they raise one, and unite the colonies before cold weather. Would this be all right?

Edinburg, N. D., Aug. 6. MRS. M. S. TROUSLIN.

[When we have a valuable queen that the bees are trying to supersede we keep taking away the cells or virgins as fast as they raise them. In this way the bees will keep the queen laying. Sometimes you can allow a virgin to mature to a laying queen; but there is danger that the bees will supersede the old mother. It sometimes happens that the queen which the bees are trying to supersede kill the cells as fast as they are filled. The bees will not long put up with that, and before long they will dispose of the old mother.—ED.]

The Advisability of Storing Comb Honey Upstairs; a Concrete Floor for a Bee-yard.

I am thinking of building a bee-house two stories high, and keeping the comb honey in the upper story, about a foot off the floor. From the top of the floor to the eaves of the roof it is to be 3½ feet.

The building will be covered with a comb roof, the comb being about 6 feet from the square of the building. Do you think it would be a dry enough place to put comb honey in the second story, the roof being covered with chestnut shingles? Some years ago I placed comb honey under a slate roof, and it was so hot that it boiled the honey out of the cells.

Do you think it would be a good idea to place two inches of concrete over a bee-yard to keep down the grass and weeds? Would it be too cold for the bees in the winter, and retard brood-rearing in the spring by setting the colonies on the concrete?

Williamson, Pa. L. H. LINDEMUTH.

[We see no reason why you could not store comb honey in the upper story of the building to which you refer, but we think it would hardly be a suitable place during the winter months. If the temperature becomes hot enough during summer to melt down the combs it would not be a safe place to put your honey. Honey is heavy stuff to handle; and the nearer you can keep it on the ground level in a warm dry place that is frost-proof and secure from insects, rats, and mice, the better.

We would not advise putting concrete two inches thick over a bee-yard. The frost would break it to pieces if it were only two inches thick. We do not suppose that it would greatly affect the temperature inside of a hive.—ED.]

Hive-covers Made Both of Wood and Concrete.

I have tried every way I can think of to make a wooden cover without putting factory work on it, but have always failed, as they will not stay the way I make them. I have made a few that I believe I shall like, although I have not yet tried them. With ¼ or ⅜ inch lumber I make a cover as wide as the hive, and long enough to nail half-inch cleats on each end. I then make another cover, out of concrete, which is 2 ft. long and 16 in. wide. These are 1½ in. thick on the two sides, and 2 in. thick in the middle. I find that these covers cost

me about 8 cts. apiece for the material, and twenty minutes' time is needed to make one. I put the thin wooden cover on the hive, and then the concrete cover on top of it. In this way they look very nice. I notice that some lay stones on top of the hives to keep the wooden covers from blowing off. Would not these concrete covers be much better?

Sycamore, O.

C. A. HALE.

[These concrete covers will, perhaps, be all right, although if you had a large number of colonies you would probably find it a good deal of work to handle such a heavy cover every time you open a hive. There would, of course, be the advantage that they would never wear out, and there is probably no chance that water could get at the thin wooden cover underneath; but still, if the hives were not perfectly level every way, and if the under side of the concrete cover were flat, it might be that the water would run along the under side and soak up the thin wooden cover. It would be well to try the few that you have made before you make a large number.—ED.]

Requeening a Colony that has Long been Queenless.

I have a colony that seems to be full of bees, but queenless, and it has been long enough to have sealed worker brood. I should very much like to save them. What would you do for them? I run them for extracted honey. They had an old queen in swarming time, and swarmed early. I caught the queen while they were coming out, divided the brood, and put half in each of two ten-frame Dove-tailed hives, filled up with empty combs, and put on a honey-board queen-excluder, and they made 20 frames of extracting-combs. After I took off the two upper stories I found they did not supersede the old queen but became queenless. I am afraid they will not accept a queen, as they have been so long queenless. I have strong colonies to take from if safe to do so.

Morgan, Mich., Aug. 18.

W. S. ADKINS.

[If the colony has long been queenless it is a little risky to introduce another queen. In the case described we would advise taking unsealed brood out of the other strong colony and putting it in this colony, letting them build cells of their own. If you find that they start them you could then introduce safely a queen that you could take from another colony, or you can allow the bees to go on with their cell-building and raise a queen of their own.—ED.]

Importance of Selling Honey-dew as Honey-dew Honey.

I have some white-clover and some honey-dew honey, mixed, from last season. This is not a good table honey. I wrote to the National Biscuit Co., Chicago, to see what they would give me. I received a very satisfactory answer, but they asked me to sign a pure-food paper. I do not know how to class such honey under that law. Will you advise me how to proceed?

Williamsburg, Ind., Aug. 2.

T. A. OLER.

[Probably all the National Biscuit Co. wants you to do is to sign a statement reading something like this: "I hereby guarantee any honey I may sell to the National Biscuit Co. at any time to be pure, according to the National Food and Drug Act of June 30, 1906."

The National Biscuit Co. will not buy honey unless it is pure. When you sell honey-dew, be sure to sell it as "honey-dew honey" and not as "honey," otherwise you would be violating the national pure-food law. The National Biscuit Co. is probably willing to buy honey-dew honey; and all it wishes to be assured of is the fact that the honey is absolutely the product of the hive, even if it is honey-dew.—ED.]

Chickens that Ate Worker Bees.

S. W. Uber, p. 391, June 15, says he has never seen chickens eat any bees but drones. I wish he could see my flock of Barred Rocks. I have my chickens and bees all in one pen; and the way those half-grown chickens eat bees is something terrible for a bee-man to look at. I thought at first they were eating only drones; but on closer observation I

could see that it was the workers they were after. The honey-flow is now over, and the bees have killed off all their drones; but the chickens keep on eating bees every day, and they do not seem to care very much for stings. They will stand a little way back from the entrance, watch it closely for a minute, and then dart at it and grab a bee, and then run; and if any of the bees give chase, the fowls stop when a short distance from the hive, and let the bee alight on their feathers, then pick it off and eat it. The chickens are well fed with all kinds of grain. I have kept bees with chickens for years, and have never observed them eating bees till this summer. A shortage of insects is the only way I can account for it. The old hens do not seem to bother—only the half-grown chickens.

Mason City, Ia., Aug. 13.

W. E. BROWN.

How to Prevent Leakage when Shipping Bulk Comb Honey in Friction-top Cans.

Having had some worry and loss of comb, or bulk comb honey, when packed in cases of 10 to 12 pound cans, and especially when shipped out of the State, I have at last found a way of packing said cases in such a manner as to eliminate all possible loss from leakage in transportation. All who have had any experience with the boxes containing the 12-lb. friction-top pails know they are very light and frail. Now, my plan and practice of preparing these for a long journey are to place the buckets in the cases after being filled; remove the balls, and crowd six pails to one end of the box and the other four to the other end, which leaves a one-inch space between the two groups of pails, in which I place a piece of one-inch lumber as wide as the box is deep, and as long as the box is wide, forming a solid partition into which the sides, bottom, and top of the box may be securely nailed after first packing paper or any good packing material between and on top of the pails. Of course, the balls should be dropped inside the box. If all bee-keepers would use care in putting their honey in the best possible shape for shipment, our freight rates might be reduced to some extent at least.

Moore, Texas.

O. E. MILAM.

A Second Crop of White Clover the Same Year.

Something which I consider unusual happened in this locality this summer, and I want to ask the readers if they ever knew any thing like it. It is a second crop of white clover. There has been a great deal of rain here all summer, and a good crop of clover in June and early July; and clover ceased blooming about July 15 as usual. There were several heavy rains about that time, however, and about ten days later a few clover-blossoms appeared. In some places there is almost as much bloom as there was the first time. This may not be any thing unusual, but it struck me as being something a little out of the ordinary.

Louisville, Ky., Aug. 11.

J. B. CHRISLER.

Curing Foul Brood in Dry Weather.

How can I cure American foul brood in this dry weather of Iowa, where there is not a drop of honey in the fields?

Cedar Rapids, Ia., Aug. 5.

V. HLAVATY.

[The method for curing foul brood in dry weather is precisely the same as curing that disease in any other kind of weather, except that it will be necessary to give a little stimulative feeding 24 hours after the bees have been shaken on to the foundation. The treatment we would recommend is the Quinby plan of shaking or brushing the bees on to frames of foundation in a clean hive. The old hive may be used again, providing it is scorched out with a painter's torch.—ED.]

End-spacing Staple in the Middle of the End-bar.

Mr. Louis H. Scholl advised placing the staple $\frac{1}{2}$ inch lower than usual to do away with propolis. I have been placing the staple 2 in. below the top-bar in the frame-ends to prevent the splitting of the end-bars, and I find I like it better than the old way, as the frame-ends, besides not splitting, are spaced more regularly from top to bottom, and I think you will find it worth trying.

Allenville, Ala., Aug. 19.

H. F. HART.

Our Homes

By A. I. Root

What shall it profit a man if he shall gain the whole world and lose his own soul? or what shall a man gain in exchange for his soul?—MARK 8:36.

Quite a few times during the past year some of my good friends have paid me the high compliment and honor of referring to these Home talks as A. I. Root's "sermons." While thanking them I feel that they give me more credit than I deserve; but this time, dear friends, I am glad to tell you that I am going to give you a real sermon. Of course it will be a *lay* sermon, but it is a real sermon for all that; and may God bless the message I bring you. I feel more free to write as above because *this* sermon is not mine, and comes from a good brother whom I have never met or seen.

On page 333, May 15, I urged you to get and read an article in the May *Cosmopolitan*; and I now wish to urge you to get a copy of that magazine for this present month of September, and read "What are You Going to Do about It?" by Charles Edward Russell. I have read the introduction, that I am going to copy here, a good many times over; and I hope and pray that it may be read over and over again. Yes, I should like to have it read by every man, woman, and every child who is old enough to understand it—especially our young men. Without any further preface, here is the article that stirred me up so powerfully:

At Iuka, a decent little town in Marion County, Illinois, the chief citizen was D. W. Holstlaw. He was commonly referred to as the founder of Iuka, which was not quite true; but he had helped it and given much to it and was accustomed to have his way about it. In the eighteenth century he would have been the feudal baron. In the twentieth he was the rich man of the town, the banker, political leader, social dictator, and business guide. He was also the example to young men and the delight of the moralists. He owned much real estate; he was president of one bank and chief owner in two others; he built and maintained the Baptist church; he selected candidates for office, and for his opinions as for his character men had profound respect. He was a good man.

In politics he chose his own prizes. He was the acknowledged Democratic leader in his region, and he went to the State legislature, first as representative, then as senator. He had passed his sixtieth year—a life free from reproach was declining full of honor. He was a good man.

In May he went to Baltimore as a delegate to the National Convention of the Southern Baptist Church, of which he was a pillar. On his way home he learned that he had been summoned as a witness before the grand jury of Sangamon County, in which lies Springfield, the capital of Illinois. Therefore he broke his journey at Springfield to see in what way he could assist the grand jury.

The State's attorney (or prosecuting officer) of Sangamon County, a slender young man not long in office, invited Senator Holstlaw to his room. "Senator," said the young man, in a quiet, friendly way, "did you ever hear any talk of bribery in connection with the contract for furniture awarded at the last session of the legislature?"

"Why, no," said Senator Holstlaw. "I never did." "Do you know a man named J. W. Knox?" "Yes, I think I have met him—in a casual way." "Did you write and mail to Mr. Knox before January 18th, a letter addressed to him in Chicago?"

"I don't think I did. I have no recollection of it." "Did you ever make any appointment with him?" "No, I did not." "Ever seek to make any appointment with him?" "No, I did not." "Ever communicate with any of the representatives of the furniture firms?"

"No, I never communicated with any of them." "Very well," said the State's attorney. "We will now go up to the grand-jury room if you like."

So they went up to the grand-jury room, where Senator Holstlaw heard the same questions and gave the same answers, and was excused.

A few minutes later he was indicted for perjury. He waited in the sheriff's office. It was a gray and trembling old man that sent word thence to State's Attorney Edmund Burke that he desired to correct his testimony before the grand jury.

"No corrections," said Mr. Burke, not unkindly. "If you are willing to make a full statement of all you know about these matters it will be received. But I can not discuss any thing else with you. You are under indictment. I advise you to secure counsel at once."

The under-sheriff sent out and got him lawyers, and at the close of the day Mr. Burke went home. Early the next morning the lawyers were at his telephone asking him to call for a moment at their office on his way to his own. Mr. Burke complied. Spread out before them the lawyers had a copy of the indictment, which Mr. Burke himself had drawn. It contained the following letter:

Forty-sixth General Assembly,
State of Illinois.
Senate.

D. W. HOLSTLAW
42d District,
Iuka,
I-12-10.

MR. KNOX, Chicago, Ill.

My dear Sir

It has been arranged that I should see you will it be convenient for you to meet me in Springfield Monday Evening say about 8 o'clock if so *wire* or write me at my home (Iuka Ill) Must see you not later than above date.

Yours Resp

D. W. HOLSTLAW.

The questions asked of Senator Holstlaw and his answers thereto followed this letter.

"You don't intend to prosecute on this indictment, do you?" said one of the lawyers.

"I certainly do," said young Mr. Burke.

Some lawyer's prolegomena followed, and then came the news that Senator Holstlaw wanted to confer with Mr. Burke.

"Nothing to confer about," said the young man, and he got up and moved for the door. "I came here under the impression that you had something to say that related to my duties. Senator Holstlaw has counsel; they will have to look out for his interests."

"Well, how about an order of immunity?" suggested counsel.

"If Senator Holstlaw will make a full, true statement, covering all phases of this matter and all he knows about bribery, I will consent to an order of immunity," said Mr. Burke. "But his statement must be submitted to me in writing, and he must be examined on it by me in your presence."

Mr. Burke went out, and that afternoon Mr. Holstlaw's statement came over. It was an explicit confession that he had received \$2500 to vote for William Lorimer, present junior Senator from Illinois, \$700 as his share of the miscellaneous graft of the session, and a promise of \$1500 for his vote on the furniture contract. Bald details of these transactions he set down—what men had bribed him and when—and, in outline, appeared something of the system whereby for years a controlling clique in the Illinois Legislature had sold legislation to the highest bidder exactly as it might sell peanuts or town lots.

Then Mr. Holstlaw was released and allowed to go home. When he arrived at Iuka his son-in-law, who had gone down the line to meet him, all but carried him from the car. He had not slept for sixty hours; his drawn face was the color of ashes; his feet hammered the earth as he tottered along. The two slipped from the rear of the train, hoping to avoid those same town people that used to welcome their Senator when he came home and were now to the shaking old man objects of unspeakable terror. So he reached his house and his bed, his aged wife weeping and wringing her hands, the window-blinds pulled down, the place darkened for shame. Some days later Mr. Burke found he must ask of Senator Holstlaw some further questions, and went to Iuka. The fallen leader lay in bed, a

physician in constant attendance. One paled hand on the bedclothes shook and twitched; he rolled his head from side to side as if in unendurable pain; his face was like a dead man's. I wish all the men that so airily and flippantly go into this deadly business of graft could have seen him, for such is the ripened fruit of their work. The wife came into the room, and the son must lead her out. Downstairs the daughter sat crying. All this household crushed; the reputation swept away that the man had toiled forty years to build; all gone for the sake of forty-seven hundred dirty dollars that the man did not need. Think of that for a time, and see where it leads you, particularly if you believe in the sanctity of the existing system.

Please notice in the above that this man Holstlaw is a professing Christian. He has in his past life built and maintained a Baptist church. Now, please do not infer from this that I am casting a slur on the Baptists—God forbid. My wife's parents and mine were all members of the Baptist Church; and I suppose if we were to trace out the history of different senators and public men who have accepted graft we should find them (and I say it with pain) in each and probably all of our churches. As I read the story I could hardly suppress a groan, and I said inwardly, "What does Christianity, and what does church-membership mean, and amount to, to a lot of our American people?"*

In a recent Sunday-school lesson we are told that the Savior went into the temple, and while there he cast out the tables of the money-changers, and then said, "It is written, My house shall be called the house of prayer; but ye have made it a den of thieves." Not only did this man build and maintain a Baptist church, but he was chosen as a delegate to a national convention of that church; and it was on his way home from that convention (at a time when one would suppose that he would be full of the Holy Spirit, and that he above all others would be living and following the injunction of the dear Savior, "Thou shalt love thy neighbor as thyself") that he was told, "*Thou art the man.*"

We are not told whether this young State's attorney was a professing Christian or not; but, thank God, we have some young men, if not old ones, whose hearts burn with indignation when they get glimpses of the outrages committed against citizenship that are given us now and then by our political leaders. This young attorney had the grit to decide and to stand up boldly against this sort of iniquity, no matter what might be the consequences to himself. What must have been the feelings of that old senator when he found he was in a trap? I wish the whole wide world, young and old, would remember this incident and

consider the consequences—try to imagine how *they* would feel when summoned before a grand jury, and being shown how their duplicity and rascality were known to all—yes, in possession of this grand jury in *plain black and white*, in their own handwriting.

I admire Edmund Burke for saying briefly, "No correction." I admire him again later on for saying, "Tell the attorneys that we have nothing to confer about." He insisted on a full and honest confession. The Bible tells us, "Whoso confesseth and forsaketh his sins shall have mercy;" and our political affairs seem to indicate that we as a people need a great lot of "confessing." This attorney finally succeeded in inducing this gray-headed old man to *tell the truth*. I especially admire Charles Edward Russell where he says these senators "for years sold legislation to the highest bidder exactly as they might sell peanuts or town lots." Is the above a fair sample of what is going on in our State and others as it was this time in Illinois?

And now comes the real wholesome moral of our lay sermon. We are not told that his conscience troubled him so long as he was not found out. How many people have we in our "land of the free and the home of the brave" who *sleep* all right so long as their iniquity is *not* brought to light? After this exposure, however, we are told "he had not slept for sixty hours." A short time ago I thought I would try Upton Sinclair's hunger cure. I held out pretty well for 26 hours, and then concluded I was "cured," and broke from my fast. Well, something disturbed me a few days ago, so I went without sleep for about 18 hours. Most of you will say, "Why, that is nothing;" but Terry tells us that it is *sleep* and *not* food that gives vigor to both mind and body; and for years past I have been having a nap about once in five or six hours, winter and summer; and when I was deprived of my sleep for 18 hours my nerves seemed all unstrung. Now, when we read that this old friend (I think *friend* is the right word; for if we are going to follow in the footsteps of the Master we must also try to follow him who is the "friend of sinners") had had no sleep for sixty hours we can imagine the color of his face and his tottering footsteps. The hand-shaking he had been wont to receive while he was supposed to be a good man, and one above reproach, were now "objects of unspeakable terror." It seemed necessary that Mr. Burke should ask him some more questions; but the thought of meeting this clean pure young attorney once more, cast him into a fever. No wonder his hands twitched and shook, and that his head rolled from side to side as if in unendurable pain. Now, then, let me repeat, and put in italics, the following sentence from Charles Edward Russell, the lay preacher, who is preaching this splendid sermon.

"I wish all the men that so airily and flippantly go into this deadly business of graft could have seen him, for such is the ripened fruit of their work."

* Once I was visiting some friends, and while at the dinner-table something was said about a certain person in that community; but the good wife protested, saying, "Why, Mr. — is a member of our church. Surely what you are saying can not be true." The husband then interposed, with a sly twinkle in his eye, "Why, my dear wife, church-members do not pay their debts any better than, nor in a different way from, other people." As this man was not at *this time* himself a member of the church, although his wife was. I could hardly accept his statement as unbiased. God forbid that such a statement should be true in any community.

We are told that the good wife, her head bowed with shame, had to be led out by her son. Downstairs the daughter sat weeping—and well she might cry. Now listen! This lay preacher says, "A reputation was swept away that the man had toiled forty years to build."

Some of you who read this story may be tempted in a like manner—possibly very soon, for graft is abroad in our land. It is in the very air we breathe. It has gotten into all sorts of business; yes, and I say it with shame, it has a few times not only gotten into our places of worship but behind the sacred desk.

One more quotation; but instead of putting it in italics I will use a larger type to add greater emphasis:

"ALL FOR THE SAKE OF FORTY-SEVEN HUNDRED DIRTY DOLLARS THAT THE MAN DID NOT NEED."

The six concluding words have such a terrible significance that I wish to repeat them again: "That the man did not need."

If you look about you and witness the scramble for money you will see every little while that somebody has been risking his reputation—yes, even *selling his soul* for a little money that he "did not need." I told you some time ago of a person whom I knew who made his life miserable because he was not given a few hundred dollars that he thought belonged to him. He could think of nothing else, day or night; but in the course of time, when things swung around unexpectedly, so that he got the money that he had worried and fretted about so much, he found he had no use for it, and no need of it. He put it out at interest, but he had no use for the interest; and when he came to die suddenly the money had never been of *any* benefit to him *at all*.

May God help us to stop and think and consider, not only once in a while but every day and hour.

For what shall it profit a man if he shall gain the whole world and lose his own soul?

After the above was dictated I came across the following in the *Sunday School Times*:

What do you think of a bank president who, being paid a large salary to serve as the head of an institution to which many people entrust their money for safe-keeping, takes this money, gambles with it in the hope of winning more, and loses it—the money of those who committed it to his keeping because they trusted him? Why is such a man despised by every one? What do you think of the men in Pennsylvania who were trusted with the great responsibility of handling millions of dollars of other people's money in the building and furnishing of the capitol at Harrisburg, and who, it was found, probably "grafted" several millions of dollars of these trust funds to their own personal accounts? Is it too severe a penalty that, of five of the men implicated, two died under the strain of their trial and conviction, while two others are to-day serving sentences in prison?

MONTGOMERY WARD & CO., AND SEARS, ROEBUCK & CO.

I am reminded by one of our readers that Sears, Roebuck & Co. are just as worthy of "honorable mention" as Montgomery Ward & Co. He adds also that Messrs. Sears, Roebuck & Co. are so much on the side of temperance that "an employee entering a saloon within a prescribed district thereby affects his own discharge."

SHALL "REBELS" RULE?

When the righteous are in authority the people rejoice; but when the wicked beareth rule the people mourn.—Prov. 29:2.

FIREBUGS BURN ENTIRE VILLAGE.

WAGE RELENTLESS DESTRUCTION UNTIL HOTEL IS THE ONLY BUILDING LEFT.

CITIZENS PATROL STREETS AT NIGHT, AND SUSPICION FACES ALL.

BUFFALO, Aug. 24.—Building after building incendiaries have devastated in Orleans, Ontario County, New York, only recently a flourishing village of 3500 population. The one place of business left standing is the Orleans Hotel, and that is being vacated to-day.

Panic fills the place, and armed volunteers nightly patrol the streets. Citizens fearing they would be burned alive in their beds have left their homes, some of which can be bought for the price of the cement walks before them. A woman locked up her house on the main street and left town. Fire destroyed the house next door but one to hers, and another fire the house adjoining.

Men regard each other suspiciously, and lifelong friends have become enemies. They refuse to talk to each other about the fires, and they fear doubly to talk to an outsider. This attitude hampers the investigations being made by District Attorney Myron D. Short and Sheriff Gooding.

The first and most destructive fire started at midnight, April 16. Although several buildings burned were not insured, the companies paid out \$30,000 on those that were. Now the insurance companies refuse to do business at Orleans, which has no fire department.

Pinkerton detectives posing as farm hands tried to find the origin of the oft-recurring fire. After a month the detectives went away with the strong suspicion that the intense bitterness between the "wets" and "drys" over the local-option question had much to do with the incendiarism.

—Cleveland Plain Dealer.

Some of you may wonder why I have copied the above piece of news, which does not differ materially from what we see in almost every issue of the daily papers, except that it speaks of the *burning-up* of an *entire village*. Well, the reason why I copied it is because of the last paragraph. The Pinkerton detectives, after a month of investigation, decided that it was simply a quarrel between the wets and drys, and they went away and left the parties to settle as best they could. These Pinkertons and some other people look down from their lofty pedestal, and seem to consider differences between wets and drys like any other neighborhood quarrel, and that both sides are more or less to blame. Now let me ask a question right here: Does *anybody*, even the liquor people, believe the drys had any thing to do with burning up that village? The drys are the Christian element of our nation. They believe the majority should rule, and make the laws, and that, after the laws are made, all people should obey them. The wets, on the contrary, do not relish law of any sort provided it affects the control of their "business." If the laws do not suit them, and enable them to go on with their money-making, they openly and defiantly *transgress* law. And that is the trouble in our nation to-day. While I write, the same vicious element are taking the law into their own hands at the capital of our State. Even when the militia have been called out they have been unable to stop the mob from stoning and dynamiting the street-cars. The Governor of Ohio is on the spot, but he is, to a certain extent, helpless.

This rebellion on a small scale is not particularly different from that of 1861. The question that confronts us, each and all, is, shall rebels rule? or shall peace-loving and law-abiding people, who are certainly greatly in the majority, make our laws and see that they are enforced?

Now, the great point in this question, it seems to me, is this: Why do not the good people of Orleans, N. Y., and Columbus, O., *banish the saloons* and have them done with? Columbus has tried closing the saloons temporarily, say after six o'clock at night, and until six the next morning. Yes, I guess *tried* is the word; for they did try, but did not succeed. The mayor and the police of that great city were not equal to the task of making the saloon-keepers "shut up," even after dark. Well, let this town and this great city, both of them, put *down* and *out* the saloons now and evermore, and there will be no trouble at all in enforcing the laws. In order to do this they must perhaps get a *new* mayor and a new set of *policemen*; and, if I conjecture correctly, Governor Harmon is slowly coming to the same conclusion. Will he do it? Here is what he says in regard to the matter, clipped from Cleveland *Plain Dealer*:

Let the investigation be swift, thorough, and sure, and all the resources of the State will be at your back to assist in punishing crime and making scoundrelism odious in this community.

Especial attention is directed to dynamite outrages. The men who are directing this guerrilla warfare against society must be discovered and punished if civil government is to continue in the land. No mercy should be shown the terrorist who, lacking the courage of the mob and the rioter, skulks in dark places, sets his deadly stuff, and then, in fiendish glee, hides himself to await the explosion. The stone-thrower and the intimidator are alike guilty of crime under the laws of the State, and will not be tolerated in Ohio.

THEN AND NOW.

The Wright Brothers and Their Flying-machine up to Date.

At the close of Our Homes for Oct. 15, 1904, I used these words: "We want a machine that will float as easily and safely as the bees, the butterflies, and the carrier pigeons. May the Lord be praised, this is already *in sight*."

The above was the closing of an article on the new inventions of the age. Shortly after (see GLEANINGS for Jan. 1, 1905), I told you of seeing the Wright brothers make their first successful flight, and that included turning around and coming back to the place of starting; and GLEANINGS was the first periodical on the face of the earth to announce to the world the crowning success of their years of experimenting in order to make a machine that would fly without a balloon. Since then the Wright brothers have been held up so prominently, not only before the people of this country, but before the *whole world*, that everybody knows pretty well what they have been doing.

Day before yesterday, Aug. 29, it was my pleasure to get around once more to the old

familiar field between Dayton and Springfield, Ohio, where they have so long made their experimental flights. I reached there about 2 P.M., and was at first somewhat disappointed on finding neither of the Wright brothers present, and to be told that they might not come out that day at all. Since my last visit a neat and convenient building has been erected, of sufficient capacity to hold a flying-machine, or, in fact, two of them, all ready to fly. A very plain notice, in black and white, met me at the gate, saying—

"POSITIVELY NO ADMITTANCE."

But I ventured to open the gate and go through, notwithstanding; and when I explained to the four bright young men that I had an invitation from one of the Wright brothers I was made an exception to the general rule.

Permit me to say right here, that, at the present time, not only hundreds but sometimes nearly a thousand are permitted to stand around *outside* the fence, for at present there is no more need of secrecy. When these young students in the art of flying informed me that they would very soon run out the craft and sail it through the sky without any assistance from the Wright brothers, my disappointment began to give way; for I reflected that, if the work had come to such perfection that the students could be intrusted to make flights all day long without the *presence* of the owners, things were indeed progressing far beyond what I expected or knew any thing about. As the wind generally goes down toward evening, a good many days most of the flying is done late in the afternoon.

In a little while people began gathering in from all directions, with automobiles and other vehicles. An ice-cream wagon came on the ground; the popcorn boy was in evidence, and one of the Wright machines was easily slid or pushed outside of the building. The track that the machine used to run on had been dispensed with, and also the weight dropping to shoot the machine up into the air. Two pairs of pneumatic tire wheels, not unlike what we see on automobiles, were so placed as to lift the car a little above the runners, made something like a sled-runner, although very light and strong, as I have explained in previous papers. One of the students took a seat near the engine. Two others took hold of the propellers to do the cranking, and the fourth young man sat on the ground and held the machine till the propellers got up to full speed. The starting-ground is simply a smooth piece of grass descending slightly a few rods. At a signal from the man in the machine the boys let go, and off it started. The rubber tires, as they bumped over the ground, made some little jolting, especially when the machine got up speed. Very gradually the rubber wheels touched more and more lightly on old mother Earth, and pretty soon the beautiful and wonderful fabric *slid* off into the air, and then it was as still and smooth

in running as a boat going through the smoothest water. To me the sight was most inspiring. I remarked to bystanders that it was more wonderful than any story in the Arabian Nights. After the machine left the ground it rose gradually in circles, and then for the greater part of the afternoon—in fact, until dusk—the machine was, most of the time, in the air, describing circles, figure eights, and making all sorts of graceful maneuvers. In going with the wind it seemed as if the speed was pretty close to a mile a minute; but in making a turn it slacked up in velocity quite perceptibly; and in coming back against the wind the speed was very materially retarded.

The boys who read these pages have, in times past, had fun in sliding down hill. But you have to walk back laboriously, dragging your sled after you. Now, boys, what sort of fun do you suppose it would be to slide down hill *on the air*, and then, instead of having to walk back, you just "slide up hill" on the air to the point of starting, and then slide down again. And that is what those students do with the flying-machine.

Six years ago I tried to tell the world what was going to be accomplished by dispensing with roads and bridges, to say nothing of iron railways and railway bridges. I asked one of the Wrights what the comparative expense was going to be for gasoline compared with the amount needed, say, to carry four people in an automobile. He said he thought the flying-machine would take *less* gasoline to do the same work; and then he made a remark something like this:

"But, Mr. Root, perhaps you know by experience that the up-keep of the rubber tires is a much greater expense than the gasoline. This machine requires no *rubber tires* as it reels off the miles through the air."

Come to think of it, there is almost no wear or tear on any thing except the engine, chain, and the bearings of the two propellers. There are at present about half a dozen machines of this kind in service in the United States. I can not say how many there are in foreign countries; but there are several factories across the water turning out machines as fast as they can possibly make them. The Wright brothers are at present employing 25 to 30 hands, and turning out machines as fast as they can. They are just now occupying a rented building, but have just completed the purchase of two acres of land near the Soldiers' Home, where a building 250 feet long and 60 feet wide will be put up this fall. I might mention here that there has been some criticism in regard to the price—\$7500—for each finished and fully equipped machine. But even at this price they are *at present* unable to supply the demand. They often tell customers that, if they can wait another year, they will probably be cheaper. But men who have abundant means prefer to pay the present price rather than wait a year. Once more, all the inventors

of the world, for ages past, have never made any machine that would fly even a few rods—that is, and carry a passenger—until the Wright brothers did; and, if I am right about it, no one has ever *since* made a machine that would fly without making use of some feature of the Wright invention. I believe this is quite generally acknowledged.* The Wright brothers commenced their experiments more than ten years ago, and they went at it in a scientific way, and have labored hard, early and late. We have often been told that in years past the real inventor of any great innovation has seldom had proper *credit* or even *pay* for what he has given the world. We hope this will not prove true with the Wright brothers.

After one of the students made his first flight and sailed through the sky at different elevations for some little time, he came down easily and gracefully, and took in one of the others who was just learning to fly. With *two* good-sized men instead of one, the machine did not ascend from the ground quite as readily. As it ran a little further it went out among the weeds, and I began to fear it would not take the air; but in a little time it stopped its wabbling, and arose from the earth as easily and gracefully as a sea gull. Many times, in watching the pelicans in Florida I have seen them strike the water with their feet in order to get up speed so their wings would sustain them; and in this case it seemed as if these beautiful structures of wood and cloth must really in a like manner have life. Another reason why these machines are at the present time expensive is that the very best of material is procured, without regard to expense. They have made careful experiments to get the very best wood, cloth, and metal. The frame for the woodwork is made of the very best clear spruce, this wood proving to have more strength for its weight than any other they have yet found. The runners that slide along the ground while alighting are made partly of the strongest ash, and are reinforced so as to stand the shock of making a landing on almost any kind of ground. As so much depends on the propeller-blades, these are made of thin strips of spruce built up together with the strongest glue. They are then covered with the strongest canvas glued on. Their mechanics, especially those at the heads of the different departments, are probably as skillful in their line of work as any who can be found.† Consider for a moment how the very lives of good people depend on the faithfulness and fidelity of their work. The machine as at present made for carrying two people is about 40 feet wide, and it is almost as

* As evidence of the comparative safety of the machines as now made, I will mention that Miss Catharine, sister of the Wrights, has made several flights, and the venerable father, Bishop Wright, was up about 350 feet, and in the air several minutes, recently.

† Some of the papers reported the Wright Bros. had found a better engine in *France* than could be made in our country. Wilbur says this is untrue.

much from the tip of the front end to the end of the steering apparatus.*

While conversing with the brothers I made the remark that we had seen the bicycle go through an evolution, and that the automobile was also now so well along in its evolution that the inventors of both machines are now settling down to very narrow lines. Inventors have about ceased making changes in the bicycle, and most of the automobiles on the market are getting closer and closer to established lines. I then remarked to the brothers, "How long will it take for the flying-machine to go through a like evolution?"

Orville replied at once, "Mr. Root, the flying-machine has already *passed* the period of evolution;" and he pointed me to the fact that the machine I was looking at that day, and admiring, was but slightly different in its main features from the one I saw years ago. In talking the matter over afterward, Orville said he did not mean to say that there would not be great improvements, and very likely many important improvements, on the machine; but he felt pretty certain the successful machines are going to be either along the line of their invention, double plane or possibly monoplanes, such as they have now, and propellers to push it through the air. England, France, and Germany have each purchased the patent from the Wright brothers, and have factories turning them out more or less rapidly.

During my first visits, years ago, before their patents were secured, I was asked to omit certain things in my write-up; but when I to-day asked if I could describe all I saw Wilbur replied, "Mr. Root, you may tell any thing you choose about our work, providing you tell the *truth*." God knows we as a people want the *truth* always and everywhere.

Six years ago, in my write-up of inventions I referred to Columbus' discovery of America. When he looked abroad over this green earth and across the great waters he asked the question, "What is beyond and across the great sea?" But the world had lived 1492 years, and no one till his time had been able to tell what *was* away off across that watery waste. Just think of it, friends! Yankee ingenuity and Yankee curiosity have now got to such a pitch that we have compassed the North Pole, or at least have come pretty near it; and now inventive genius is at work to solve the mystery of the South Pole. Recent developments in Alaska indicate great things are destined to be brought to life in that region. Columbus was not content until he had pushed ahead and opened up a new world beyond the one known in his time. And let me predict once more in closing that the Wright brothers have by honest, faithful,

hard, and untiring work, and *scientific study*, wrested from Nature this great secret, and we are just now on the eve of exploring the mystery of the great "upper deep."

Poultry Department

By A. I. ROOT

POULTRY-HOUSES FOR SOUTH FLORIDA; IS A ROOF NEEDED? ETC.

The writer, being very anxious to find the right kind of poultry-house for South Florida, has submitted Mr. A. I. Root's article to the best poultry experts he can find in this section. In the article of July 15, page 457, criticism is asked for. The writer's knowledge of the conditions here being so recently acquired he does not feel competent to criticize. The men whose views he will try to give are fitted by long experience to speak, and he attaches considerable importance to what they have said. As his plans call for about forty colony houses in the near future, the question is a very vital one to him. Is it necessary to build as expensive a house as the senior editor's? Can a few dollars be saved on each one of the forty without detriment to the fowls and without cutting down the egg-production?

The matter was first laid before Mr. B., who came here 18 years ago from Northern Ohio. He is a hustling, wideawake, active man who has not lost his energy by long residence in this warm country. He landed at Ft. Myers with a sick wife and a little babe and no money. The doctors had said that Mrs. B. could not live. As a forlorn hope he spent all he had to get her here. Seeing that there was government land here he came up the river in a skiff and began the then herculean task of opening a home in the wilderness. There were no markets and no means of transportation; but he won out, and the wife still lives, perhaps the most useful woman in the community. The above is written that one may judge whether or not his experience was gained in a school that fits him to pass judgment. He pronounces the house too costly, and too uncomfortable for the chickens. Better, as he sees it, a cold rain occasionally with a few days slowing up on the eggs, than the fleas. The raking-out of the house each morning is too much labor, and is unnecessary. In this sandy soil, and in this healthy climate, things keep sweet and clean much longer than they do in Ohio. One who is running a large poultry-ranch can't stand either the work or the expense of daily cleaning, and it is not needed here. His poultry-house is boarded up six feet high on the north, east, and west. The south side and the top are covered with two-inch poultry-mesh to keep out the varmints. His fowls are healthy and vigorous. His egg production is large, and almost continuous the year round.

It is hard for us who have formed an idea of what is good poultry management under the rigorous conditions of the North to understand the far South and what it requires. I, therefore, quote the opinion of a successful farmer who has been 28 years in this neighborhood and 40 years in this State. He is one of those practical fellows who make a success of life, always having something to sell, and that something the thing that the market demands. He says no roof on the hen-house. The cold storms come very rarely. When they do the egg yield suffers for a few days. Under a roof the fleas flourish and the hens sicken and die.

The most successful chicken-man in this section is Mr. S., who has a five-acre grape-fruit grove about half a mile east of Alva, and who fertilizes his trees with the droppings from 600 hens. He has been at this business 12 years, and makes egg-production yield him a good living. He is a shrewd thrifty New Englander, counting the cost of every thing and getting a maximum yield at a minimum cost. He feeds oats, corn, and shorts. The first and the last are kept about the place in boxes to which the birds have free access. They are given about half as much corn three times a week as they would like to have. Corn is too heating for this climate. His birds roost in the trees to cut out the cost of

*Inventors all over the world have tried "something different"—machines to float by the flapping of wings, as a bird flies, for instance; but their machines *did not fly*—that is, they do not fly unless they make it pretty near something in the line of following the Wright brothers from first to last.

houses, and because it is nature's way. He objects to roofs on account of fleas; says that the chickens scratching in the Florida soil, backed by Florida's pure atmosphere, will make it unnecessary to clean up very often. His rule is, cut out all unnecessary expense either of money or labor.

One other's views should be given. He is a bright young man who has lived many years in the State, but has only recently come to South Florida to enter a homestead. He plans to raise poultry on a commercial scale, but has had no experience at the business. His idea is an open-sided colony house with a tight roof and a cement floor. He expects to clean his houses every day.

I believe that I have got to forget nearly all of my old ideas, and begin with new ones. It is my present purpose to build a frame out of 2x3 pine studding, and cover it with poultry-netting on the top and sides. In this will be the roosts and the nests. These will be shut up after the chickens get into them at evening, and opened in the morning. These will be inexpensive and (I hope) efficient. If roofs seem to be wise they can be put on later. Just now the smallest investment of money, time, and work seems to be very important. Should the plan prove to be unwise, a report will be submitted with the hope that it may be of benefit to some of your readers.

FRANK M. BALDWIN.

Denaud, Fla., Aug. 5.

My good friend, you strike on some very important points. Now I wish you would, at your first opportunity, ask those friends how they manage to get clean eggs to market. My experience is, if the rain is allowed to fall on the hens' nests the eggs will be stained more or less; and in the summer time it rains almost every day, as you know. I am well aware that no roof over the fowls helps greatly to keep out vermin, and I presume it is also better for the health of the fowls. Now, then, friends, the problem is, how shall we deliver to our customers nice *clean* fresh eggs unless our hens' nests are covered to keep out rain?

Our readers may remember that I have kept poultry in Florida for three winters without any houses whatever except a covered place for the hens to lay. Now, just think of it—living in a locality where you can run a large poultry-plant, if you choose, without any roosting-places whatever! There are, however, two very serious drawbacks. How are you going to catch your chickens when they are up in the trees? When you wish to separate your cockerels from the pullets, how are you going to catch them? How are you going to catch them to clip their wings? If you use the open hopper, feeding as I have always done, you will find it a big task to catch any chicken unless, indeed, you climb the trees to catch them, and you may not be able to get them even then. This is a great objection to roosting in trees. The other objection is that owls sometimes take even the grown chickens; and, if I am right about it, coons also sometimes climb trees. I was *finally* obliged to decide that I wanted my poultry, big and little, shut up nights where not even a rat could get in. Of course, this necessitates closing all the houses after the fowls have gone to roost, and opening them up again in the morning, say at daylight or soon after.

BERMUDA GRASS AND STICK-TIGHT FLEAS.

In regard to the stick-tight fleas, here is something more from a Florida man:

If Mr. A. I. Root will keep his chickens on a good sod of Bermuda grass he will not be bothered with jigger fleas.

R. ADDISON.

Loughman, Fla., July 18, 1910.

The above is a valuable suggestion. In Florida the chickens must have green feed the year round; and we have just one yard now so heavily sodded with Bermuda grass that 100 chickens on an eighth of an acre could not, I believe, keep the grass eaten down as fast as it grows. You see the droppings of the fowls give the Bermuda grass just the stimulant it needs to do its best, and I hope that this Bermuda grass will keep off stick-tight fleas, as they live only in sand.

POULTRY BULLETINS FROM OUR VARIOUS EXPERIMENT STATIONS.

I have been reading with great interest Bulletin No. 119, from the Northwest Experiment Farm at Crookston, Minn. I was particularly interested in the tables where they tested dry-mash and wet-mash food. The wet mash gave a little the more profit, it is true; but when we take into consideration the extra work required, I should decide in favor of the dry mash. But I was still more interested in the experiments to determine whether the Hogan & Potter systems ("don't kill the laying hen") were worth what the promoters charge for it. Here is what they say in regard to the matter:

During recent years there have been many widely advertised systems for choosing the laying hen; and the discoverers have made a great deal of money from this system. They claim that, by certain signs and types, they are able to estimate quite accurately the number of eggs a hen will lay in a year.

With a view of giving one of the most popular of these systems a trial, we persuaded the discoverer to come personally and estimate the laying qualities of 50 Leghorn pullets.

The birds were then carefully trapped for a year, and the result in the table gives a very good idea of the worth of the system.

Well, after looking over the table showing the results of the experiments, which were kept up for a whole year with 50 laying pullets, it seems evident to me that the system amounts to but very little, if any thing at all; and yet who knows how many people have been humbugged by sending their dollar or *ten dollars* for this great secret?

LEE CO., FLORIDA—AWAY DOWN ON THE SOUTHERN LIMIT.

If you will look on your map you will see there is only one very small county below Lee—that is, Lee is very near the southern limit, the jumping-off place, I might almost say. Well, a good deal of attention has been directed to this region of late by land speculators. Lake Okeechobee and the Everglades are right in touch with the north-eastern corner of Lee Co.; and the drainage canal, of which we have been told so much, is now being cut through from Lake Okeechobee through the Everglades swamp to Lake Hitchcock; and from this lake another drainage canal is to go through to Lake

Flirt, and this lake is connected with the Caloosahatchee River.

On p. 232, March 15, 1905, you will find a description of my visit to Fort Myers, near the mouth of the Caloosahatchee River. I was so much taken up with Fort Myers at the time that I should doubtless have chosen the locality for my winter home instead of Bradentown; but at that time Fort Myers and all of Lee Co. were "wet;" and as I did not want my home in a saloon town I chose Manatee Co. I am glad to say now, however, that Fort Myers is a dry town, and has been for some time. Well, I have been having inquiries right along during the past year in regard to buying land in the Everglades. It is true they are at work on the drainage canal; but, as I have said so many times before, do not think of investing money in land, or land anywhere, until you have been on the spot and seen it; and even then make purchases of somebody who lives there and has a fair reputation for honesty. While I can not say much about the Everglades and the vicinity of Lake Okeechobee, my impression is there is some very desirable territory along the Caloosahatchee River in the direction of the lake. The principal difficulty is that but few people live in that region as yet. A railroad runs to Fort Myers, and steamers run up to all towns along the river.

Now, with this long introduction I wish to submit a letter from one of the new towns up toward the big drainage canal. The friend who writes the letter will doubtless give us particulars later on:

Mr. Root:—A number of your readers have written me, asking if there was homestead land here, and if this is a good bee country. To the first question I have replied yes. To the second one I have said I do not know. No one who has been knowledge has tried it; but I believe it is a good honey country. An unusual thing that is happening now may throw light on this last proposition. The bees that are kept in box hives swarmed as usual in January and February. From what I hear I judge that they were more given to that this year than common. At that time oranges and grapefruit as well as pennyroyal were in bloom. Now the cabbage palmetto is in full bloom, and is giving a heavy honey-flow. It is so heavy that the bees are swarming strong, sending out very big ones. The few bee-keepers are at a loss to understand it, and the wiseacres are predicting disaster to the bees. My impression is that the bees' instinct is all right, and that they will pull through in good shape. Pennyroyal is coming on fine, and the indications are a very early bloom. As it usually begins to flower in November, early flowering would mean October. In the present condition of the honey-flow, even a weak after-swarm should be able to gather enough stores to carry them sixty to ninety days. If you think this will interest your readers, I will watch the outcome, and report when the tall honey-flow is on.

Denaud, Fla., Aug. 13. FRANK M. BALDWIN.

Friend B., tell the bee-keeping friends in your region they never need fear that a honey-flow any month in the year is going to bring "disaster." I once visited our good friend O. O. Poppleton when he was extracting in January; and when I left Florida a few weeks ago, down on the island Mr. Shumard was then extracting honey that came from the palmettos; and if I am correct a flow of honey may come in that

southern climate at almost any month in the year. Yes, friend B., tell us more about the honey-flow in August; and, by the way, I suppose a lot of us would like to know something about that drainage canal? How is it progressing? In regard to land for homesteaders, a friend who has spent several seasons in that region tells me there is plenty of it; but the principal drawback is that it is so far away from everybody.

GETTING RID OF THE MIDDLEMAN AND— SOMETHING ELSE.

Since provisions have become so remarkably high, much has been said about cutting out or getting rid of the middleman as far as possible; or, in other words, letting the producer make a short cut and get into connection with the consumer. The *Rural New-Yorker* has told us that the farmer gets only about a third of what the consumer pays for his stuff. You may remember my telling you about paying 50 cents for a broiled fish on a Pullman dining-car; but when I got down to my own home at Osprey, Fla., the boys were selling just such fish (in ton lots) for only 3 cts. In this case there had to be quite a few middlemen between the producer and the consumer. Again, if you want an apple when traveling on the cars, three nice apples will cost you a dime; but if you go out into a farmer's orchard the dime will pay for a whole peck; but you may have to pick them up yourself.

What I am going to consider to-day is, not cutting out the middleman, but I am going to talk about cutting out the *middlewoman*. Never heard of a middlewoman, did you? Well, I will try to introduce you to her; and while the middleman might take offense when you talk about cutting him out because of his large profits, I think you will find the middlewoman not only taking no offense, but she will be exceedingly glad to welcome you. I have talked to you quite a little about no suppers. Mrs. Root and the children—yes, and the grandchildren too, perhaps—laugh when grandfather talks about "no suppers." The reason that they laugh is because of my fruit supper (as they tell it) at five o'clock; a dozen good-sized plums, half as many peaches, and half a dozen apples for dessert. Well, they were not far out of the way. The peaches were quite small, and the apples not very large; and, besides, I was fruit hungry. Now notice. The short cut I was talking to you about, cutting out the middleman and the middlewoman too at one bold stroke, was in making a beeline for my favorite apple-tree at just five o'clock. Mrs. Root was the middlewoman in this case. She did not have to prepare any knives and forks and clean napkins to put on the table; no clearing-up of the table nor finishing-up of any kind. I just go out to the apple-tree where beautiful luscious apples are getting dead rip day after day, just

about as fast as we want to use them. After I finish my repast I dip my fingers in the fountain near by and moisten my lips, and use my handkerchief for a napkin, and Mrs. Root does not feel hard, nor complain a bit because she has *nothing whatever* to do in preparing or furnishing the closing meal of the day.

Now, there is still another way in which I am cutting out the need of a middlewoman. My sponge bath, for some weeks back, has been taken just before I go to rest. There are several reasons why I prefer a bath *before* retiring, rather than in the morning. First, I get to sleep better. Second, if I have done any perspiring work during the day, I get washed off clean before I put on my clean night-dress; and by being very thoroughly washed before retiring, the sheets will go over so much longer without washing; and in this way I save the need of a middlewoman. By the way, is it an easy thing for *you* to get a woman to do the washing in your neighborhood? We have thought that, since the saloons went out of commission, the women who used to do the washing for a living are becoming scarcer and scarcer; and as supply and demand regulate these things, the price of washing goes away up (and the quality of the work often away down); and I believe it is an axiom in economic philosophy that we should try to dispense with things when the price gets to be prohibitive. Now, then, if you wash every day as I do before you retire, your nightgown, pillowslips, and sheets (also underwear) will last a long while without the services of the middlewoman. If that woman happens to be your good wife, she will give you a vote of thanks, I am *sure*, for any effort you may make to lighten her cares and responsibilities.

A FAKE GROCERY COMPANY.

Mr. A. J. Root:—As I have been reading GLEANINGS for a number of years, and have taken special interest in your writings, I wish to call your attention to a fake grocery company which is going through the country. One man by the name of Story goes ahead and takes the orders, and a man by the name of Smith follows two weeks later and delivers the goods. The fake which I have reference to is this: The man who goes ahead taking the order says their soap bars weigh a full pound, where others weigh only 12 oz. Mother ordered one box of 30 bars, or 30 lbs., and she got only 27 12-oz. bars—only 20 lbs. and 4 oz. instead of 30. Please publish this so as to put some people "next to them."

Helena, Mo., Aug. 17.

E. W. TRACHSEL.

My good friend, I would, as a rule, refuse to have any thing to do with traveling men of this kind. Better trade with merchants in your own town whom you know and can trust. But in the case you mention you should have refused to make *any* advance for goods until you had *seen* them and *examined* them. This should always be the rule, especially when trading with strangers. Perhaps I might suggest that soap is generally losing in weight on account of evaporation; but this could be no possible excuse for furnishing only 27 bars when they agreed to furnish 30.

"GETTING RICH QUICK," "PROFIT-SHARING," ETC.

I do not know but I shall have to keep some warning like the above in every issue; and let me repeat briefly, I would advise you to have nothing to do with any periodical, especially any home paper, whose editor keeps urging you to invest or take stock in some enterprise of his own—I do not care whether it is the *Woman's National Daily* or *Farmer Orth's Poultry Journal*. I would not permit any publication to have a place in the home that keeps continually urging you to invest in its special speculation. The poultry journal mentioned above recently devoted two pages to urging its patrons, one and all, to invest in a new magazine. It went on to tell how much money the editors of our different magazines have made in a short time; and out of the kindness (?) of the editor he unselfishly proposes to permit all his friends to join in with him and *get rich* in just a little while without hard work. Very likely the stories he tells about magazine editors and publishers getting to be millionaires in just a little while are, in the main, true; but because *one* man made a lot of money out of strawberries, celery, or *publishing a magazine*, it does not by any means follow that *you* can do the same, or that *any one* can do it. Just because people insist that they can do what others have done, the world is full of blasted hopes in poultry, strawberries, celery, and publishing magazines. Perhaps everybody does not know that a new magazine is coming out almost every week, and I do not know but every day would be nearer the truth. We see a sample copy put out with a great flourish. Sometimes three or four copies follow, and that is the last of them. The probability is, there is just as good a chance for you to get rich quick at what you are doing this very minute as any thing else you can go into. "Let us not be weary in well doing; for in due time we shall reap if we faint not."

Just one word more in closing. A man who is doing a good business already will not be urging his friends, neighbors, and everybody else, to go in with him and get a *share* of that good business. The above will apply to Florida land speculation as well as any thing else.

After the above was in print I ran on the following, which I clip from a recent number of the *Rural New-Yorker*:

The Circle Publishing Co., publisher of the *Circle Magazine*, at 50 Madison Ave., has filed a petition in bankruptcy, with liabilities \$111,200 and assets \$51,832.

In this connection we repeat what we have so often said, that we do not know of a single successful publication that is or has been trying to sell stock or borrow money on notes from its subscribers. Publishers who try to induce subscribers to furnish the money for their ventures are fond of quoting the large profits made by other publishers; but the successful publishers do not offer their stock to the public. Whatever value a publication has is principally what is called "good will" or franchise; and while this may render a good income to the management, it may and often does disappear with changes of management, and is altogether too uncertain a quantity for the invest-

ment of money by people not connected with the policy of the business. But while there are a few profitable magazines, as a whole they are not big money-makers. Magazines have probably lost more money in the aggregate for publishers than they have made.

There may be a suggestion in the above record for people who are now being tempted to put their money into debentures (notes) issued by the straw man invented by E. G. Lewis.

THE BOYS WHO WANTED A PONY.

A letter from a home where GLEANINGS goes, from a boy nine years old, reads as follows:

Mr. A. I. Root.—I have been wondering if the biggest bee-man in the United States wouldn't help the two littlest ones.

Molina, Colo., Aug. 14.

The printed circular that goes along with the letter explains that a periodical called *The Farmer's Wife* agrees to give a Shetland pony to the boy or girl who sends them the largest number of subscribers before a certain date. The proprietors of the periodical say they have a farm of 400 acres where they raise these Shetland ponies. They have already given away 18 to the boys and girls who have secured the largest list of subscribers. Now, this boy of nine years is very enthusiastic; yes, he and his brother, only seven, are almost wild over the idea of getting that pony, and ask if Uncle Amos can not consistently lend a helping hand. I confess it made me feel sad to be obliged to say that I could not. The trouble is right here: A lot of boys and girls will go to work getting subscribers so that they may secure that beautiful little pony; and while the successful one will, no doubt, be very happy, there will be a hundred others—yes, perhaps a good many hundred—who will be terribly disappointed because somebody else is just a little ahead of them; and that is always the way it works with almost any contest where a valuable prize is offered to just one person, when a great number have worked equally hard for the prize. And this kind of work seems to be a kind of steppingstone, not only to the prize business, but (to call things by their right name) to the *lottery* business. It develops an unhealthy craze for getting things in that kind of way. I know that such plans often succeed in giving certain periodicals a large circulation; but when people subscribe for a magazine because of the *prize*, and not because of the intrinsic value of the periodical itself, such subscribers are very likely to prove only transient. May God help us to be careful about setting a good example, and *only* a good example, before our children.

ROBBING SICK PEOPLE; ELECTROPOISE, OXYDONER, AND OTHER "HUMBUG TOYS."

Something like twenty years ago GLEANINGS began to expose the preposterous claims of Electropoise. Our older readers

will remember all about it. A little later the same thing came up under the name of "Oxydonor," and in spite of the warnings we held up in almost every issue, many good people paid \$25.00 for a senseless toy that did not cost the manufacturer 25 cents. They claimed at the same time that they had testimonials from a hundred ministers of the gospel; and the good pastor of our church obtained permission for me to speak before a conference of ministers, at which time I gave them a vehement protest in regard to permitting swindlers to use their names. So many people, however, insisted that Oxydonor possessed *real virtue* that I made some bitter enemies among some of my good friends, and I am afraid that some of them are enemies still. When GLEANINGS seemed unable to stem the tide I appealed to the *Rural New-Yorker*. They invited Dr. Sauche or one of his representatives to bring his trappings to their office; and the result was they promptly denounced him and his so-called invention. After the *Rural* and GLEANINGS together protested with all the influence they could bring to bear,* most respectable periodicals refused to advertise Oxydonor any longer; and I had been congratulating myself that this form of robbing sick people had finally gone out of fashion; but the following clipping from the *Rural New-Yorker* intimates that this old doctor (?) is still at it where, or he can find victims. I have appealed to the Post-office Department at Washington several times, but they do not seem to be able or willing to put him in the penitentiary, where he belongs. See the following from the *Rural*:

I wish you would do what you can to warn people through your paper against a most pernicious medical fraud called Dr. Sauche, of Oxydonor fame. Have you heard of him? This device which he calls "Oxydonor" (oxygen-giver), and for which he gets \$14.00, consists of a little metal band to be buckled around the patient's ankle, and connected by a cord with a small metal disk which is to be immersed in a basin of water for half an hour at a time. The device might cost, perhaps, 25 cents to manufacture, and he makes his deluded patrons believe that it will charge their whole systems with a vast quantity of oxygen, and cure any disease, however long standing, or intractable, or even fatal. It would seem as though a moment's consideration would show even ignorant persons that the only way oxygen could possibly enter the system would be through the lungs; but I know positively that this Sauche has swindled thousands of very poor and very sick people out of \$14.00 apiece for a perfectly worthless device. I have an idea that he is advertising through the country papers mainly now, through fear of the pure-food and drugs law. If you can warn your readers against him you will be putting them under still greater obligation to your paper. His address was Chicago, Ill., at last accounts. Ohio. AN M. D.

There seems to be little to add to what this physician has said above. Our own experience confirms what he says about the purchase of the fake by poor and sick people. In one or two cases reported to us we insisted on a refund of the money, and it was returned, no doubt, under fear of exposure.

From the above it would appear that he has reduced the price from \$25.00 down to \$14.00; but 14 cents would be more appropriate, especially when it is some poor wash-woman who scrapes up the money from her hard earnings.

*So many inquiries came in that we were obliged to print circulars at different times, explaining the fraud; and we have some of those circulars still that we send out whenever the matter bobs up again.

Gleanings in Bee Culture

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Editorial

REMEMBER that the National convention is to be held at Albany, N. Y., Oct. 12, 13. See announcement of railroad rates on page 20, advertising.

AT this time of the year beginners in the North are often worried because some of their colonies have no brood or eggs. This is not an alarming condition, necessarily, for many queens gradually stop laying in the latter part of September or the early part of October.

OUR Canadian correspondent, Mr. Holtermann, mentions the fact that we made a flying trip through Canada, calling upon some few bee-keepers. We were making a motor trip; but, unfortunately, it rained or looked threatening the days that we were in Canada. As a consequence we hurried through, driving something over one hundred miles in the mud and rain, and were glad when we could get to a lake port and ship the machine to Cleveland. We saw only one bee-keeper in Ontario and that was our correspondent. We hope we may have the pleasure of visiting Canada some time in the future, when the weather is more favorable. As it was, our Canadian trip was cut short.

WEDDING BELLS.

WESLEY C. FOSTER, our Colorado correspondent, was married to Miss Cordia May Stevenson, Aug. 31, at Parkville, Mo. They will be at home Oct. 1 at 2113 Arapahoe Ave., Boulder, Col.

We are sure that our readers will all join us in their heartiest congratulations. Mr. Foster, while a comparatively new correspondent, has demonstrated that he is able to furnish excellent matter for his department. He seems to be in close touch with all Colorado bee matters, and, what is more, is a practical honey-producer himself.

THE MICHIGAN STATE CONVENTION.

MR. E. B. TYRRELL, the energetic secretary of the Michigan Bee-keepers' Association, is preparing an excellent program for the convention that is to be held at Grand Rapids, Mich., Nov. 9 and 10. Day sessions will be held in the Board of Trade rooms,

and night sessions at the Eagle Hotel, which will also be the headquarters of the convention, at a rate of \$1.50 per day.

The Michigan bee-keepers are some of the most progressive in the whole United States. They always have good conventions, and this meeting promises to be one of the very best. Some speakers from outside have promised to be present.

THE KENTUCKY BEE-KEEPERS SUCCEEDED, AFTER ALL, IN GETTING THEIR FOUL-BROOD LAW.

IN our Aug. 1st issue we copied a clipping sent us by W. C. Furnas, to the effect that, owing to the omission of the enacting clause, the Kentucky law would not be effective. We are advised, however, by Mr. M. A. Aulick, M. D., one of those who were chiefly interested in pushing the law, that the law appears in the list "Acts of the Kentucky Legislature for 1909, '10." We quote as follows from Mr. Aulick's letter:

Our law has been in active effect since June 15, 1910. The statement was published broadcast over the State (I think by the glucose interests), that the bill would not become a law, owing to the omission of "be it enacted;" but this was followed by a statement by our Secretary of State that it would become a law. It is a matter of fact that these words were omitted, and I do not know how the matter was fixed up; but the law appears, among the rest in the list, "Acts of the Kentucky Legislature for 1909, '10."

Bradford, Ky.

M. A. AULICK, M. D.

HONEY CROP VERY LIGHT; BUYERS HOT AFTER HONEY.

As the season advances it becomes more and more evident that the general crop of honey throughout the United States has been a light one. Apparently it is even lighter than it was last year. A year ago we had a fair yield of Western honey; but in many sections of the great West, especially in California, the crop has been light, almost a failure in some localities. While there has been a splendid yield in some portions of the East, yet these areas seem to be somewhat limited. We know it to be a fact that the buyers are out hustling after honey as they never did before.

Now is the time to get good prices, and it is our opinion that, before much of the honey held in reserve is let loose, and there is not much, the figures will have to advance a little. In the meantime, bee-keepers who have honey should not make the mistake of holding too long. Better sell when buyers are hot after it than to wait until after the holidays, when prices always slump.

AN EFFORT TO PREVENT THE SPREAD OF DISEASE IN CALIFORNIA.

THE bee-keepers of Stanislaus Co., Cal., are not going to sleep on the question of fighting foul brood. To prevent indiscriminate shipping of possible foul-broody colonies, combs, etc., the following set of rules is sent out:

NOTICE OF SHIPPING, HAULING, OR RECEIVING BEES.

To all Railroad Station Agents, Shipping and Express Clerks, and Transfer Station Agents in Stanislaus County, California:

You are hereby notified to observe the following rules in forwarding and in receiving shipments of hives containing bees or empty hives containing combs, which rules are in accord with the statutes of California.

Any empty hives containing combs, or any hives containing bees, that are shipped or transported into this county from any place outside this county having an inspector of apiaries, must be accompanied by a certificate from said inspector, showing said bees and hives to be free from disease.

If no certificate accompanies said shipment, the same must not be delivered to the consignee until the inspector of Stanislaus Co. has been notified and has given release.

If a certificate as above accompanies said shipment, the same may be released; but notify the Stanislaus Co. Inspector of the consignment at once, together with name and address of the consignee.

If shipped from a place wherein there is no inspector, then notify me as last mentioned.

Absolutely receive no bees or empty hives for shipment or transportation to be sent from this county without a certificate signed by the inspector of this county, showing the bees and hives to be free from foul brood or other infectious or contagious diseases. A violation of the law in these matters is a misdemeanor, and the law must be complied with.

Ceres, Cal., May 24.

J. G. GILSTRAP,

Inspector of Apiaries for Stanislaus Co.

A CHEAP AND SERVICEABLE COMB-HONEY SHIPPING-CASE THAT DOES NOT COST A PENNY.

MR. H. F. HAGEN, of Reno, Nevada, has been using ordinary boxes in which 500 sections are packed for shipping comb honey. In other words, he has converted the ordinary section crates or boxes into shipping-cases. The length necessarily will be exactly right for four rows of sections when filled with honey. The depth may vary, but this can be made up by layers of straw or corrugated paper. The advantage, says Mr. Hagen, of this arrangement, is, that they cost absolutely nothing, and the cleat or framework at the ends of the boxes makes excellent handles for lifting the cases. They will never be laid on their sides because it will not be convenient to turn them over. When the two tiers of sections are not quite deep enough to fill out the case, straw can be used to make up for the rest of the space to very good advantage. Some straw should be put in the bottom of the box and some on top. When sections are packed in a container like this they are bound to go through in good order.

We doubt if very many people who buy sections have ever realized that the original boxes in which they come can be converted into excellent shipping-cases. Of course, some markets would not take them; but locally they could be used to very good advantage; and even for long distances, if the

consignee at the other end of the line knew he could buy the honey for a little less money, he would be willing to receive it in such containers. The only difficulty is that there will not be enough of these section-crates; but if they are saved, in two or three years they will go a long way.

OHIO'S EFFICIENT PURE-FOOD COMMISSIONER.

WE were very much gratified to receive the news a few weeks back that R. W. Dunlap, Ohio's efficient pure-food commissioner, was renominated for the third term. In Ohio politics, at least, it is very rare that a public official, no matter how capable he may be, holds more than two terms of office. But Commissioner Dunlap has done such good work that his party renominated him for the third time, and there is good reason to believe he will be re-elected. He has done so well that his name has been prominently mentioned as a possible successor to the present very efficient Secretary of Agriculture, Mr. Wilson, Washington, D. C., when he retires. Mr. Dunlap has the indorsement of a number of the best food commissioners of the various States; and a no less person than Dr. Harvey W. Wiley, the United States champion of pure food, has spoken very enthusiastically in his praise. He has done excellent work in enforcing law, and in getting on to the statute-books other laws that were urgently needed. He has improved the sanitary condition around our dairies; has compelled dealers to sell oysters instead of water and oysters; in fact, he has made the State of Ohio stand at the very front in the line of pure food and honest labeling. Mr. Dunlap has come to be a national figure in the line of pure food; and the people of Ohio will make a great mistake if they do not send him back to Columbus with a greatly increased majority.

SOUTHERN CALIFORNIA NOT A BEE-KEEPER'S PARADISE.

OUR California correspondent, Mrs. H. G. Acklin, remarks that a rumor has come to her that some of the bee-men of her State are afraid that there will be an influx of Eastern bee-keepers on account of our new California department. We do not think our friends of the Golden State need have any fear along this line. In the first place, we have repeatedly made the statement that the bee-keepers of Southern California, at least, have only about one good year in five, and a fair year perhaps every three years. The conditions are so very different and so uncertain that any bee-keeper in the East who has any locality at all would do better to stay where he is. What makes bee-keeping less profitable in California than in many sections of the irrigated regions is because of the uncertainty of the rainfall. After a good year on the coast it very often happens that there will be two years when there will be nothing doing, and lucky is

the bee-keeper if he can make enough money out of his bees during a good year to tide him over the bad seasons. The facts are, many thousands of colonies starve in the off years in California. This fact alone is evidence that the Eastern fellows had better think twice before they migrate into California. Of course, we admit that, when the Californians do have a good year, their average yield probably goes away beyond the average yield of many Eastern apiaries; but divide that yield by three and possibly five, and it is not so big.

EUROPEAN FOUL BROOD; CAN THE COMBS INFECTED BY THIS DISEASE BE RENDERED SAFE TO USE AGAIN? A SERIES OF TEN ARTICLES FROM S. D. HOUSE, A MAN WHO KNOWS THE ART OF PRODUCING NEARLY ALL FANCY COMB HONEY.

In a recent trip through the State of New York we called on Mr. S. D. House, of Camillus, and there learned that, although European foul brood is very prevalent in that vicinity, our friend has no disease of any kind among his bees. When asked for an explanation he said, "Mr. Root, the secret lies largely in having nothing but pure Italian bees of vigorous stock. While the yellow blood alone won't prevent infection from an apiary affected with this disease, yet when this race is used in connection with other preventive measures, it can be very easily kept out of a yard." Further inquiry revealed the fact that Mr. House uses either the Alexander treatment or the McEvoy; much depends upon circumstances. In some cases it is more practicable, he said, to use the Alexander. In speaking of this treatment Mr. House said Mr. Alexander probably did not know the great importance of having pure Italians. While he said that Italians were an element of the treatment, he probably did not appreciate the fact that there was more virtue in the race than there was in the dequeening part. Dequeening is important; but he went on to explain that one can practice either the Alexander or the McEvoy treatment, but ought to understand that it is necessary to have pure Italians of a vigorous strain.

We looked over a good many of his colonies, inspecting brood here and there. It was all clean and healthy. We also examined the apiary of one of his pupils, Mr. Irving Kenyon, who, a year or so ago, bought a yard of black bees that were rotten with European foul brood. Mr. F. A. Salisbury, of Syracuse, N. Y., in telling us of the circumstance, related that he told Kenyon that he had made a bad bargain; but Kenyon, he says, went to work requeening with fine Italian stock, using the House-Alexander treatment. The result was, he cleaned European foul brood out entirely, and that, too, *without destroying a comb*. In this connection Mr. House showed us one colony that had been rotten with the disease. It was a hive of blacks that he had bought.

He had expected to shake this on to foundation *a la* McEvoy. In the mean time he killed the old queen and put in a vigorous Italian. Circumstances prevented his shaking; and when he went to look at the hive again, lo and behold! the bees had nearly cleaned up the combs. "Now," said he, "I thought I would just let them go and see what they would do." A short time afterward they had cleaned it all out. We looked over the combs of the hive, and a motley lot they were; but there was not a trace of disease of any sort, and, mind you, *this colony had never been shaken*.

While Mr. House did not go so far as to say that requeening with Italian blood would cure *American* foul brood, he was most decidedly of the opinion that it was a very important element in any treatment, whether McEvoy or any shake-out plan that has ever been advocated. He then made the remarkable statement that European foul brood does not thrive readily except in a place where there are black bees or hybrids; that with any kind of intelligent management it can make no progress in a good Italian apiary. If Dr. Miller would get rid of his blacks and hybrids the Alexander treatment would produce results. European foul brood had no more terrors for him than the bee-moth.

When we told him that we were fearful that European foul brood might some day land at Medina, he very confidently asserted that we need have little fear so long as we kept a good strain of Italians and used reasonable precautions.

Mr. House went on to say that the Alexander treatment would not necessarily clean out all the disease the first year, even with Italians. Some little of it would show the next season; but, never mind, the Italians would clean it up if they are given a reasonable chance.

When asked as to whether he used the Alexander treatment exclusively, he said no. Sometimes it is more convenient and much more profitable to use the McEvoy. This he will explain in detail later.

Mr. House gave us a number of kinks of the trade; and before we left we engaged him to write a series of ten articles. While at his place we used our Graflex camera and took something like one hundred pictures, showing him in his various poses in handling bees.

He is certainly an *original* genius. He knows the production of both comb and extracted honey from A to Z. We are satisfied that these ten articles that he is to write for us will be some of the most valuable that we have ever given to our readers. When we consider the fact that they will be illustrated by a series of moving pictures, it will seem almost like visiting Mr. House in his yard. One can form some idea of the value of what he has to say when it is known that he produces some of the very finest comb honey that ever finds a market. It is nearly all "fancy." He has a number of tricks of the trade that he will explain.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

WHITE CLOVER quit in July, and in September there is a second crop—don't know whether bees get much from it.

L. H. LINDEMUTH, page 597, my mother kept section honey in an attic, and the heat of the summer, or perhaps only fall, so ripened it that it kept perfectly through the winter without granulation or cracking of the comb.

A. I. ROOT, p. 578, you were not careless at all in your reading in the old version about Jesus eating honey. The second definition of "honeycomb" in the Standard is the comb and its contents; and in the Bible, honey-comb always means comb honey. Several times the sweetness of honey-comb is mentioned, and you know the empty comb is not sweet.

SOME TIME AGO Editor Hutchinson said he never scraped burr-combs off top-bars, and asked if any thing was gained by it. I don't know about extracting; but I know that, if they are left year after year, combs will finally be built between top-bars and sections, and, what's worse, honey will be there. I don't want the bottoms of sections muzzed up in that way. [Same experience here.—ED.]

HAVE YOU laid up a store of sealed combs of honey for the bees next spring? It pays to do so. About two for each colony if you have eight-frame hives. Not so many, possibly, for larger hives. [We have for years made it a practice to lay aside nice sealed combs. These we hold in reserve, and give to colonies toward spring as they may need them. It is usually not practicable to feed liquid syrup in midwinter, nor even in cool weather in the spring.—ED.]

A BEE-LINE is popularly supposed to be the course always taken by a bee. According to the French investigator, Felix Plateau, as quoted in August *Deutsche Bzcht.*, this is by no means always true. If a bee finds a good foraging spot, no matter through how circuitous a route, it will continue to visit it, but always by the same circuitous route that it took on its first visit. [You are quite right. A bee-line is generally supposed to be a straight line. Very often bees strike out in a zigzag course. Whether this is due to air currents or what, we do not know.—ED.]

THIS QUESTION is handed me: "Is it best to allow the first honey to fill the brood-chamber?" No; better leave some room for brood. But I suppose the idea is: "Is it best to let the bees store what they will of the first honey for winter stores?" Generally such honey is of best quality for wintering, and it will be a safe thing to leave it in the brood-chamber. But a good queen

will have so much brood that in an eight-frame hive not half enough of the first honey can be left for winter, and the rest of the winter stores *must* be filled in later in the season.

Here's the situation: At the beginning of the harvest, more or less empty combs are in the hive, which the bees fill before filling the supers. Probably nothing is better for the bees than to leave them to their own devices. But for the bee-keeper, if he has a fall flow that is good for wintering, it is better to replace these empty combs in the spring with sealed combs of the dark honey he has saved from the previous year. It gives him just so much more light honey as surplus.

"A TABLESPOONFUL of glycerin to one gallon of honey will prevent it from granulating!" says the *Canadian Bee Journal*, page 229. [The pure-food inspectors in this State have determined that the use of glycerin in honey would be a violation of the pure-food law. Not long ago a dealer in Cleveland, Ohio, paid a fine for putting glycerin into his extracted honey. In defense he said he did not use it to cheapen the honey, because the article is far more expensive; but he did it to prevent granulation. The pure-food commissioner held that any foreign substance put into honey for any purpose whatever would be considered by his department as an adulterant, and he would proceed to apply the law to all persons who used it. It would be unwise to use it in any State. Incidentally we may say that we doubt very much whether glycerin will prevent granulation. Some tests we made in an experimental way showed that it had little or no effect.—ED.]

S. KING CLOVER, I'm with you about the width of hives, p. 585. I never could understand why a dummy was not as necessary in a ten-frame as in an eight-frame hive, and I wouldn't tolerate the latter without a dummy. [The reason the dummy was not put in the ten-frame hive was because when the eight-frame was widened out so as to take in a dummy there was very little demand for the ten-frame hive. It was expected that it would soon go out altogether. But gradually, and before the manufacturers knew it, there were as many ten-frame sold as eight-frame, and now some of them are wishing they could make the change without throwing every thing out of gear. If they were to make the change now, the new ten-frame hives would not fit those of older make. Supers and covers of the older type would be too narrow for the newer ones. Most of the factories probably concluded that the confusion would not counterbalance the slight advantage gained. Sometimes bee-keepers in the field do not understand that, however desirable a change may be, the manufacturer can not afford to give his customers stuff that will not match material bought at a previous date. Experience shows that it would make all kinds of trouble.—ED.]

Bee-keeping in Southern California

BY MRS. H. G. ACKLIN, GLENDORA, CAL.

If we *are* obliged to feed our bees this fall we are still ahead of our eastern brothers, as we do not have to "lug" them into winter quarters.



On a return trip to "Old Baldy" we came by a queer little apiary on a side hill. The hives were painted red, and the covers were roof-shaped. There was a honey-house, but no evidence of people being around.



I am credibly informed that an individual (do not disgrace manhood by styling him a man) not many miles from Los Angeles has for the last two or three years set out poisoned water purposely to kill bees. Have we no law to meet such a case?



In a paper read at our club meeting, Sept. 3, Mr. De Sellem spoke about a lady bee-keeper whom he met on one of his tours of inspection, and of the neatness of her apiary. A lady bee-keeper! that sounds good. I have not had the good fortune to visit one since I left Minnesota. Lady bee-keepers are not so scarce in the North Star State.



Doolittle's discussion, p. 581, Sept. 15, reminds me of a party here. Birds are numerous, and puncture the deciduous fruit before it is ripe. Bees soon find those broken places, and, unlike the birds, do not fly away when some one goes to the tree, and consequently get all the blame. How a sane person can claim that honey-bees do that damage is incomprehensible; but this person insists and says he knows bees are the culprits.



California bee-keepers are struggling with robbers in the same fashion, as nearly as I can make out, as are their brothers in Minnesota and adjoining States. Some of our bee-keepers are feeding back honey extracted earlier in the season; and I know from experience that feeding back honey is a very troublesome task. If your honey will bring the price of sugar, better feed sugar syrup, and robber bees will not be so plentiful. Bees always seem to detect the odor of honey, no matter what precautions are taken.



No honey, but disease among the bees has seemed to dishearten some bee-keepers to such an extent that they have neglected their apiaries, and the inspector has had some strenuous times in getting such yards cleaned up. Let us not be discouraged. Next year may be a banner season. Let

me suggest right here that there should always be a sort of good will or fraternal feeling among bee-keepers that would restrain any one of them from willfully harming another. Leaving fixtures from a diseased apiary exposed to other bees will, with a certainty, work harm to some other bee-keeper.



A rumor has come to me that some of our bee-men are afraid of an influx of eastern bee-keepers on account of this Southern California department. Never fear, dear friends; people all over the United States, and possibly across the briny deep, have known for some time that there is a Southern California, and also that a few bees are kept there. But, all joking aside, eastern bee-keepers know more of real California conditions than many of our own people; therefore a department in a bee-journal is not going to ruin our business here any more than departments from other States ruin theirs. On the contrary, this department should be the means of bringing about a closer union and a more friendly feeling among bee-keepers all over our land. Should one or two new ones happen to stray in, there are still vacant canyons among the higher mountain peaks, so let us put all selfishness aside and leave the latching in.



CLUB NOTES.

The Los Angeles Co. Bee-keepers' Club met in Chamber of Commerce, Los Angeles, Sept. 3. The convention was well attended, and an interesting and profitable time was enjoyed by those present.

The president and secretary were in their places, and after the usual business routine three papers were read by the following persons: Mrs. H. G. Acklin, "Wintering Bees in Minnesota and Adjoining States;" Mr. J. W. Ferree, Newhall, "Management of Bees;" Mr. Geo. B. De Sellem, Hollywood, "Field Notes."

Mr. De Sellem's paper was highly appreciated by the club members. While foul brood is still prevalent in many sections he takes an optimistic view of the situation, and commends bee-keepers for the way in which they have assisted him in his work; also for the good-natured way in which they have met this great honey-dearth.

Mr. A. B. Shaffner was made chairman of the press committee. The whole club constitutes the committee. Each one of us is expected to report to him on conditions in his own locality once a month. The object is to keep erroneous reports concerning the bee business out of the papers.

The legislative committee took up the question of spraying fruit-trees, thereby killing bees, and expect a similar committee in the State Association to co-operate with them in getting a law passed for the protection of bees.

Convention then adjourned to meet again the first Saturday in December.

Notes from Canada

By R. F. HOLTERMANN

ON THE WING.

A few Canadians had a flying visit from Mr. E. R. Root the first days in September. One of the places visited was Brantford. I am sure Mr. Root would be welcome for a much greater length of time during the honey harvest. If you should be spared until another year, Ernest, just try us.



THE NATIONAL CONVENTION.

The National to be held at Albany, Oct. 12 and 13, should be well attended. The officers have made up an inviting program. Our well-known Ontario friend, J. L. Byer, in dealing with the subject "Extracted Honey from Nectar to Market," will, no doubt, do credit to Ontario and Canada. Mr. Byer, with either voice or pen, can always interest. In my estimation it has always seemed to me unwise to say, "Come to the convention, and when you get there we will show you what the bill of fare is." The individual wants to be his own judge of what may be worth while to see and hear.



QUEENS ENTERING THEIR SECOND WINTER.

Referring to Dr. Miller's note, page 404, I am quite sure that in Canada not one bee-keeper in a hundred can be found who does not allow a queen to enter into her second winter. In my estimation such a system of having only young queens might be advantageous, but is it practical? Queens cost money or its equivalent. I make note of every colony that attempts to build queen-cells—especially those that do not appear to have sufficient provocation. The queens in these colonies are changed, and as many others as seems to me wise, and that I can readily provide queens for. Beyond this I have not gone. There may, however, be a better way.



PERCOLATOR FEEDERS.

In Samuel Simmins' article, p. 550, Sept. 1, it will be wise to note the following: "The lump sugar is raised or suspended in a perforated chamber, so that it can not clog nor settle in a mass on the main base of the feeder;" and, again, "Syrup-cans, as well as large cisterns, were adapted to the same principle; but where used as cisterns for reducing large quantities it is found an advantage to place the sugar in a bag within the metal strainer."

I tried the percolating method, using a tank with a capacity for 500 lbs. of honey. The sugar would settle in a mass on the bottom of the tank, preventing the liquid

from passing through the perforated bottom, and I gave it up. There are few so situated that they can not readily make syrup with hot water, and I doubt if I shall ever go back to the cold-water system. Besides, I want to use tartaric acid, and this necessitates bringing the syrup to a boil.



WEEDING IN.

When we bear in mind that those who destroy the poor and worthless, and retain and care for the good and useful in breeding are said to be weeding *out*, the term "weeding *in*" will be readily understood. This, then, is the season of the bee-keeper's year when many are laying the foundation for destroying their best colonies and retaining the inferior. Colonies which have been headed by prolific queens which have kept the brood-chamber well filled with maturing bees, and in which there is consequently comparatively little honey, are, of course, much more likely to die of starvation, unless specially fed, than those which have had less brood and more honey. Is such a policy wise? Some bee-keepers ought to have the society for the prevention of cruelty to animals after them. What is the difference between tying a cow in a stall until she starves to death, and keeping bees until *they* starve to death in the hive? For the one we have prosecutions; for the other, so far as I know, we have no punishment. Perhaps the members of the society mentioned are afraid to meddle with a bee-hive.



EXPERIENCE.

Here in Ontario, this year, the older bee-keepers are again hearing a good deal about how much money there is in bee-keeping, and how little capital and time bee-keeping takes. I say the *older* bee-keepers, for the younger generation have heard this now for the first time. In the earlier days these statements were combated vigorously at conventions and in the press, and probably the same will take place again. For my own part the truth will do no one an injustice. That honey in Canada will remain at the price it has for some years, I doubt; and if a bee-keeper is going to manage bees at the expense of but little time it can only be after he has put in a lot of time to gain the experience necessary to size up the situation as to the condition of the colony, the reasonable expectation from the honey-flow, etc. There have been in Ontario a great many disappointed embryo would-be bee-keepers who have nothing to show for their attempt but a depleted pocketbook, and perhaps a pile of empty hives. Put people on their guard; let them be shown the difficulties in bee-keeping; let them understand that it is a profession, and to succeed in it requires experience, thought, and time, and in the long run there will be more gained to the province, and the Department of Agriculture will not be discredited.

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

The rosin (or wax) weed, as some call it, is very profuse this year, and is furnishing a good quantity of fall honey. In average years we dislike to see it bloom at all, for the honey is yellow, and strong in flavor, spoiling the flavor and color of our alfalfa honey. But this year, when we are hoping that the bees will get honey enough to winter, we are glad to see almost any kind of honey gathered by the bees. Some of our older bee-men aver that the honey from the rosin weed will candy while the bee is on the way from the flower to the hive; but the story is generally supposed to be taken with a grain of salt. Rosin-weed honey will candy almost as soon as stored in the cells, some years; this year, though, it does not seem to be giving us so much trouble.



COST OF HONEY PRODUCTION.

Mr. Pollock, page 552, Sept. 1, is not far off in his figures on the cost of honey production; but I think a good bee-keeper should be able to care for more than 200 colonies without hiring extra help except during the busy season. I know a number who have from 500 to 700 colonies, and hire a man during the summer if the crop warrants it. In these cases the cost of help is not over two or three hundred dollars. Perhaps the main reason so many bee-men can not care for more bees is because they lack a good system of manipulation. I think the only solution of the question is to keep more bees and get more for our honey by improving its quality and stimulating the use of honey among those who rarely eat it.



MOUNTAINS AND CLIMATE.

The cold shoulders of the Rockies push up into the sky from two to three miles, and the warm moisture-laden winds from the Pacific striking these granite walls form clouds which give up their moisture in the form of rain or snow. The irrigated valleys of the West nearly all lie close to the mountains, and it is often cloudy or partially so. Two or three times each summer the clouds envelop the mountains, pulling down the veil almost to the base of the foothills, the edge of the clouds forming a straight line along the slope of the mountains for miles. The weather turns cool—so cool, in fact, that heavy clothing is comfortable in July. These clouds may hang down close for several days; and when they do lift there is quite probably snow on the high peaks of the range. These days are not relished by the bee-keeper, for the bees can do nothing, and it is several days after the sun has again appeared before honey comes in good quantities. The honey crop of 1909 was cut in

half or more by a week of this cloudy weather coming in the first part of August.

We can count on a cool spell by August 20, almost every year. The warm nights so necessary to secretion of nectar are at an end when this cold wave strikes us. The days take on a crispness which forces the fact home that fall is here; the alfalfa still blooms, but the bees do not work much on it. The sweet clover and rosin weed are visited much by the bees up into October; but new wax does not show up in the hives, and all the honey seems to find a place in comb that was built in the earlier part of the season when the summer was at its height. This August cold wave is usually so pronounced that we are more comfortable with a fire in the grate; but in a few days the weather warms up somewhat, though the crispness remains.

This season has treated us to a more radical change by giving us a change in temperature from 95 to freezing in one night. During the whole season we have been having extremes. In March, when snowy, slushy weather is our accustomed portion, we were having fruit-bloom; then a little later, when we generally get a whiff of summer breezes, we woke up on May 22 to find four inches of snow—not a very long period from snow the last of May to freezing weather, August 22; but then, even with all these eccentricities of the season the fruit and farm crops were not destroyed, though some of them had a hard time to make a creditable showing. Just this week, the first of September, we have had a beautiful sight, the whole range of mountains forming the continental divide blanketed in a glistening sheet of snow several inches deep. As I stood in the bee-yard to-day watching the bees hurrying to and from the alfalfa, sweet clover, rosin weed, etc., I could see the snow of the range, twenty-five miles away to the west.



RIPENING COMB HONEY.

Mr. Doolittle tells, in the August *American Bee Journal*, of the way the honey in unsealed cells around the edges of the sections leaks and runs out when the section is tipped over on the side. Now, our alfalfa honey will run out of the unsealed cells right after it has been stored; but after a very few days of our hot dry sunshine, the honey in these unsealed cells is thoroughly ripened. Our arid climate does the same thing for us that Mr. Doolittle secures by painting his shop with black paint to draw the heat, and by using a stove when the sun does not furnish the warmth. This thickening and ripening effect which our dry atmosphere has on our honey is one of the reasons for the ready sale which Western honey enjoys. Many a time have I seen a section of snow-white comb honey broken till it seemed there could not be a cell wall that was not shattered, and yet the honey was so thick that it would hold its shape for several hours. Our Western sun and aridity accomplish this result.

Conversations with Doolittle

At Borodino

PROLIFICNESS IN QUEENS.

"An old bee-keeper told me in the spring that he valued prolificness in queens above all other qualities. He wanted them so prolific that lots of brood would be reared at all seasons of the year when the weather would permit. In other words, he wanted the hive overflowing with bees spring, summer, and fall. Now I could not get my queens to come up to such a standard."

"Well, Mr. Smith, if this old bee-keeper had modified what he told you, and said that he valued the prolificness of a queen above all other qualities when it could be regulated so as to be of the greatest profit, I would hold up both hands for it. Here, where we have but about six weeks during the whole season in which the bees make any gain in honey, what we want is a queen which will fill the hive to overflowing with brood during a few weeks previous to this honey harvest, and lay just as few eggs at all other times as is consistent with accomplishing this object. If Mr. Smith had a piece of work that he had to finish by a certain time, if he intended to receive any profit therefrom he would hire his help before that time expired or not at all. If the help did not come until too late, surely he would not keep and board them six to eight months because it was not convenient for them to come sooner. He would tell them he did not want them, for it was too late. So I say, when any one says he wants the hives overflowing with bees in the fall there must be a mistake somewhere."

"But is there any race of bees that will give the required number of bees just when they are needed at the honey harvest?"

"Probably not, unconditionally; but with proper forethought the Italians come the nearest to it of any race so far brought to my knowledge. They are more susceptible to coaxing so as to have the hive overflowing with the bees at the right time than are the blacks or any of the other races from the Old World. Then what is of nearly as much value, as soon as the honey harvest arrives the queen will cease her extra prolificness, and thus we do not have a lot of hungry hands to board when they are of no use. At first I did not fully realize the possibilities in the Italian bees. But in the year 1884 I ran across something from the pen of O. O. Poppleton, now in Florida, but then in Iowa, which set me to thinking and experimenting more largely than I had done up to that time. Here is what he wrote, p. 50, 1884: 'I get very much the best results from my purest and lightest Italians. They seem to be much more disposed to stop brood-rearing partially and bend all their energies to honey-gathering, whenever there is a heavy flow of nectar, than any other

kind of bees I have tried, and this is a very great advantage.' And all of the years since then has proved that Mr. Poppleton knew what he was talking about."

"Then you consider this a trait of the golden Italians, do you?"

"I would not want to confine this matter to the goldens entirely. They may possibly be a little better along this line; but all Italian bees have this same propensity. If I were running for extracted honey I think there would not be difference enough along this line to pay for keeping the goldens unmixed from those termed dark or leather-colored. But for section honey, the goldens enter the supers more readily, and cap their honey much whiter than do the others."

"With the blacks, or German bees, which were the first ones to get a foothold in this country, there is little difference as to early prolificness of the queen. But the trouble with them is that they will continue to breed during the honey-flow with little or no slack; hence we have an extra lot of consumers after the honey season is over—enough so that often there are not enough stores left for wintering without feeding. But with the Holy Lands, Syrians, Cyprians, Carniolans, etc., none of them seem to care to go to brood-rearing to the maximum extent until the harvest arrives. Then, instead of bending every energy toward the storing of honey, they go to brood-rearing with a vengeance, oftentimes resulting in the consumption of the larger part of the nectar gathered during the harvest, with the maximum number of bees on the stage of action when the harvest is closing, this great board having to obtain their support from whatever was accumulated during the harvest. In over half of the years during which I tried my best to accomplish something with them worth while, there would be very little surplus fit for market, and the hive nearly empty for winter. The Italians, during these same years, furnished stores for these other races, with frames of sealed honey which they could spare in September, and gave quite a fair crop of section honey."

"Tell me about the management necessary for the queen to be most prolific just a few weeks before the honey harvest."

"I used to feed, spread the brood, etc., as recommended in the bee-papers of a quarter of a century ago; but now all I do is to know that each colony has sufficient honey so they feel no need for retrenchment during any time of scarcity which may occur from early spring till the honey harvest."

"And do you find that this answers as well as feeding and spreading brood?"

"Equally well if given as advocated in the serial* published in GLEANINGS of a few years ago. There is nothing better by way of encouragement of rapid brood-rearing prior to the main honey-harvest than for the bees to realize having '*millions of honey at our house.*'"

* A Year's Work in an Out-apiary. In book form, paper cover, 50 cts. New edition just off the press. For sale by the publishers of this journal.

General Correspondence

THE CONDITIONS NECESSARY FOR SECURING HEATHER HONEY IN GREAT BRITAIN.

BY D. M. M'DONALD.

At the first glance it might appear that the treatment of heather honey might be inappropriate for the pages of GLEANINGS, as I believe it is not found in America. When, however, it is viewed simply as a late autumn source of nectar, a "fall" flow, in fact, the appositeness becomes patent. For working any late flow, crowded colonies, doing quick and expeditious work, are of the greatest importance. It is not always within the reach of the bee-keeper to be sure that all his stocks shall be strong, and ready for good work in supers for early fruit bloom, or even for clover in unfavorable seasons; but when working for a late flow such as the heather he has the matter to a great extent in his own hands. These colonies being obtained just when the early days of August show the hillsides one radiant display of purple bloom, consisting as they do mainly of young energetic bees, eager for work and ready to improve each shining hour, can be relied on to do the very best of work, both as to amount and finish. If the queens are young and prolific, occupying almost every spare cell in a restricted brood-nest, the sections, if warmly wrapped up, will be rapidly filled and sealed. In such circumstances they will all be found heavy, well finished, and generally able to be graded first class. It must be fully understood that these powerful colonies are a *sine qua non* if full success is to be counted on in working this late flow.

SECURING STRONG COLONIES.

We can do this in at least one or the other of three ways: 1. By doubling early in the season and allowing the queen and bees the range of the twenty frames in the two tiers, we can count on an enormous number of bees peopling that hive in early August. But some three weeks before the opening of the heather flow the queen is confined to the ten lowest frames selected as those containing the least brood. The other ten are left on above until all the bees have hatched out in about three weeks after the former change, when they are carried away *en bloc* and their places taken up with additional section-racks. Three of these are often necessary; and if some of them are filled with partly finished sections from an earlier flow, very rapid work is done—so much so that results would astonish bee-keepers accustomed to medium colonies. Care must be taken that the second body box is not withdrawn at too early a date, as then a congestion would arise, causing swarming even at this late period. Such colonies with good weather and a rich heather bloom may be

relied on to roll in the honey at a rapid rate; and the brood-frames being occupied it must go upstairs where the apiarist desires it.

2. We find, of course, that a powerful colony, in spite of all the care and attention which can be given it, will at times persist in swarming, accept the swarm, and, while it is out, shift its body box on to a new site adjoining, and place a new set of frames on the old stand. Return the swarm, which, with the flying bees, will make a strong stock; but don't rely even on this powerful body of bees. In about eight days carry the old body box, all this time lying alongside the new colony, when the whole of its flying bees will be added to the already large army of workers. If this operation is carried out just before the heather flow we are certain to have a force of bees fit for the best work in surplus chambers. As our swarmed queen has by this time almost every inch of comb in the breeding area occupied by eggs and brood, all surplus must perforce go into the supers. In this way we secure the very finest work in section-building; for a swarm, as is well known, works with an energy all its own, while its combs are generally cleaner and finer in finish.

3. We may, in the early days of August, manipulate our hives in such a way that a certain number will have every frame a mass of just hatching bees by the middle of the month, all prepared to work at high pressure. This strengthening of all hives worked for heather honey at home, or transported to the moors, should be carried out to the extent that not only will the lower body combs be a solid mass of brood, but the hives should also be boiling over with bees. Every nook and corner of the brood area and also the surplus chambers should be densely crowded with workers. This gives an ideal force which yields a regular succession of young bees to replace others when they are worn out, as all the combs carried to the heather hills are simply hatcheries, being packed with sealed brood in all stages of development toward the perfect worker. Such colonies will toil most assiduously, and carry on their indefatigable labors early and late with a fixed determination to fill every vacant cell. Some short-sighted opportunists would feed syrup before going to the moors, with the idea that they may thus force the bees to store aloft. The theory sounds plausible; but on analysis it proves thoroughly unsound, because they thus block the queen. If theory demands that the cells of brood-frames be full, then let them contain only eggs, larvæ, and just hatching bees, which will soon emerge to take the place of those worn out by the strenuous life lived by bees at the heather, working on exposed moors.

AIDING THE BEES.

The apiarist should aid his bees at all times in every way he can; but particularly during a late flow every little kindness tells by adding to the bees' comfort and bringing a rich reward. He must watch the flow and arrange the interior of the hive to se-

cure the largest profits. He should be liberal in the use of super foundation, nothing less than full sheets being permissible. It is inadvisable to give too many frames to these stocks wrought at high pressure for this late flow. My preference would be nine frames. Sections must be kept very warm because the nights begin to chill, and at as early a date as possible finished crates should be withdrawn gradually until toward the close of the flow only one is left. Bees of a good capping strain are best for the heather, and almost all heather men swear by the blacks. In excessive heat, be liberal with the amount of ventilation, but don't overdo it. A large entrance is at all times desirable. Such a force of bees requires ample scope for exit and entrance in order that there should be no crowding or impeding of the diligent toilers.

PACKING AND TRANSPORTING.

Special heather hives are turned out by several appliance-dealers, admirably arranged for ease and speed in packing. They are supplied with means for ample ventilation, and are provided with an arrangement for carrying supers in position. A few screws driven home is about all the packing required. Any common hive, however, can be arranged in such a way that there is little fear of a breakdown in transit. The question of transporting hives to the heather has been reduced to a fine art in many parts of Scotland and the north of England. Many apiarists carry them thirty or forty miles to the foraging grounds in all sorts and conditions of vehicles, from a small hand barrow to the huge lorry carrying a heavy load. The journey is generally undertaken at night, and the bees liberated at early dawn. When the distance to the moors is more considerable, bees are sent by rail; and now even motor cars are utilized for this purpose. Some cozy sheltered nook is selected on dry porous soil, with a slope coming gently down from the foraging-grounds, so that bees heavily laden will have their homeward journey down hill. A southerly exposure is preferred, as on such reaches the sun's rays ripen and expand the heather bloom more fully. It is a glorious sight to see those heather hills at their best, with their illimitable stretches of purple hue stretching leagues and leagues on every side, scented like a honey-comb. These bees work as I think they can do nowhere else—at least in this country.

HEATHER HONEY.

The product of *Calteia vulgaris* is of a rich amber color, bright and sparkling, rather than dull and shady. It has a strong pronounced flavor, delicious to the palate when one has acquired a liking for it. The aroma is pungent and penetrating, making itself manifest in a room where heather honey is kept in a closed cupboard. Its consistency is so remarkable that it will not leave the comb by any amount of centrifugal force used in the extractor, and, when desired in the liquid form, the combs have to

be pressed by heavy screw power in a specially constructed press. Most bee-keepers in heather districts, therefore, work for sections only; but it pays well to press all defective combs preserved for the purpose, and thus renew the works of the brood area periodically. On account of the profusion of the bloom the flow is at times extraordinarily abundant; but as the lateness of the season frequently causes unfavorable weather conditions the crop is an uncertain one.

Heather honey sells at about double the price obtained for any other kind in this country. While a great part of the flower, clover, and lime honey in sections brings the apiarist only 18 cents per lb., heather frequently fetches him 36 cents. While, too, the other kinds drag on the market, heather honey sells readily, and is often disposed of before it comes off the hives. Retail prices in Edinburgh and London warehouses are often as high as 48 to 60 cts. per section!

Banff, Scotland.

FOUL-BROOD LEGISLATION.

The Foul-brood Laws in the United States Criticised; Permitting Bees to be Kept in Box Hives Prevents the Eradication of Disease.

BY I. HOPKINS,

Late Chief Government Apiarist of New Zealand.

Allow me to congratulate you on securing a foul-brood act for Ohio. You say in your issue of June 15 that "In the opinion of some of the best experts in the country it is one of the best measures that was ever enacted." If this is meant to apply to similar acts already in force in the United States only, then I have nothing to say against the experts' opinion; but if meant to embrace all acts of the kind, then I differ with them.

The Ohio act, as given in your issue of March 15, has the cardinal weakness of all your other acts, and, therefore, for efficiency in controlling disease I can not see that it is one whit better than the others. That weakness is, in not enforcing the use of frame hives only as domiciles for bees. The chief obstacle to the efficient control of disease has been and always will be the ignorant and careless bee-keepers. These are the men who keep their bees in bee-gums, packing-boxes, skeps, etc., with immovable combs, and I maintain that any one keeping bees who does not get beyond this stage is a positive drawback and a danger to the industry.

For fully 25 years the bee keeping industry in New Zealand was kept back through foul brood, which was rampant all over the dominion. The spreading and propagation of disease was entirely due to the ignorant and wilfully careless box-hive bee-keepers. Knowing this so well, when I had the honor of drafting our "Apiaries Act" I made the compulsory use of movable-comb hives the paramount section of it. The effect of this

provision has been to drive out of the business automatically the great majority of the ignorant and careless, leaving only the frame-hive men to deal with.

Presumably, the man who adopts up-to-date bee-appliances is the one who will do his best to keep his bees clean. That is how we find it; and since doing away with the box-hive man we have been able to clean whole districts that were previously rotten with disease. I would ask, how is it possible for inspectors to do efficient work where there are fixed combs in boxes? Some must be cut out to be examined, and in this act they are compelled to do the very thing which will spread disease, to say nothing about the enormous amount of time required to examine thoroughly a box-hive apiary, as compared with one of movable-frame hives.

Our impression here is, that, with all your acts and inspectors in the different States, you are not making much headway, if any, against disease; and this impression is made through the reports that appear from time to time in your own bee literature. Do away with all but movable-frame hives, then you will do away with the root cause of most of the trouble in controlling disease.

I hope, Mr. Editor, you will take my criticism in good part, for believe me I mean well, and recognize the assistance I have received, in my own progress, from American bee literature.

Here is a copy of a digest of our Apiaries Act.

Auckland, New Zealand.

THE APIARIES ACT.

The following is a digest of the Apiaries Act which came into force September 14, 1907:

INTERPRETATION.

2. In this Act, if not inconsistent with the context, "Apiary" means any place where bees are kept.

"Bee-keeper" means any person who keeps bees or allows the same to be kept upon any land occupied by him.

"Disease" means foul brood (*Bacillus alvei* and *Bacillus larve*), bee-moths (*Galleria mellonella* and *Achraea grizzella*), and any other diseases or pests from time to time declared by the Governor in Council to be diseases within the meaning of this Act.

"Frame hive" means a hive containing movable frames in which the combs are built, and which may be readily removed from the hive for examination.

"Inspector" means any person appointed by the Governor as an Inspector under this Act.

BEE-KEEPER TO GIVE NOTICE OF DISEASE.

3. Every bee-keeper in whose apiary any disease appears shall, within seven days after first becoming aware of its presence, send written notice thereof to the Secretary for Agriculture, at Wellington, or to any Inspector of Stock.

POWERS OF INSPECTORS.

5. Any Inspector may enter upon any premises or buildings for the purpose of examining any bees, hives, or bee appliances; and if the same are found to be infected with disease he shall direct the bee-keeper to take forthwith such measures as may be necessary to cure the disease; or if, in the opinion of the Inspector, the disease is too fully developed to be cured, he may direct the bee-keeper within a specified time to destroy by fire the bees, hives, and appliances so infected, or such portions thereof as the Inspector deems necessary.

REMOVAL OF BEES TO NEW HIVES.

6. In any case in which it is found by an Inspector that the bee-combs in any hive can not, without

cutting, be separately and readily removed from the hive for examination, he may direct the bee-keeper to transfer the bees to a new frame hive within a specified time.

INSPECTOR'S DIRECTIONS TO BE OBEYED.

7. (1) Every direction by an Inspector shall be in writing under his hand, and shall be either delivered to the bee-keeper personally or sent to him by registered letter addressed to him at his last-known place of abode.

(2) Every such direction shall be faithfully complied with by the bee-keeper to whom it is addressed, and, in default of compliance within the time specified, the Inspector may, within one month, destroy or cause to be destroyed by fire, at the expense of the bee-keeper, any bees, hives, and appliances found to be infected with disease.

INFECTED BEES, ETC., NOT TO BE KEPT OR SOLD.

8. No bee-keeper shall—

(a) Keep or allow to be kept upon any land occupied by him any bees, bee-combs, hives, or appliances known by him to be infected by disease without immediately taking the proper steps to cure the disease; or

(b) Sell, barter, or give away any bees or appliances from an apiary known by him to be infected by disease.

FRAME HIVES TO BE USED.

9. No bee-keeper shall, after the expiry of six months from the passing of this Act, keep, or knowingly allow to be kept on any land occupied by him, any bees except in a properly constructed frame hive.

OFFENSES.

10. Every person is liable to a fine not exceeding five pounds who—

(a) Obstructs an Inspector in the exercise of his duties under this Act, or refuses to destroy or to permit the destruction of infected bees or appliances;

(b) Fails to comply with any direction given under the provisions of this Act by any Inspector;

(c) Commits any other breach of this Act.

THE VALUE OF BEE AND HONEY EXHIBITIONS TO THE BEE-KEEPING FRATERNITY.

BY ADOLPH LOEHR.

We have annually at Madison Square Garden (the colosseum of New York) a series of trade exhibitions and shows where men of various callings gather, either to sell or advertise their wares or to gain a knowledge of the newest productions and general progress of their particular line of business, and in some instances to place orders. The general public is always well represented, because, to the casual observer, these exhibitions are very educating. The annual house-furnishing show is one of these exhibitions. When the writer learned from a daily paper that bees were going to play a part in the coming show he wondered of what interest they might be in furnishing a home, and attended the show to find out.

After passing by the various booths of the house-furnishers, where many new and interesting specialties were shown, we were attracted by a great crowd gathered about a large cage listening to a "demonstrator" inside the cage. At first we could not hear what this gentleman was saying, because a band of young musicians were evidently trying to prove their capability of filling every cubic inch in the great hall with the blasts from their lungs. By an occasional peek through the depths of the millinery on

the exaggerated head-gear of the lady standing in front of us we chanced to make out the form of a stately man in white uniform, apparently in the service of Uncle Sam's army. This proved to be Capt. Wm. A. Selser, of Company B, First Pennsylvania Honey Guards; and evidently Capt. Selser has great confidence in his army, for he explained that he had enough bees with him to kill every one before him. Don't be alarmed. He was merely revealing some of the secret defenses of his army and their great power over foreign intruders. He showed us how harmless his soldiers are toward their friends by having them push numerous stings into his arm. He afterward placed these stings on a sheet of white paper and handed them to his assistant, who showed them under a microscope.

Mr. Selser gave an exceedingly interesting lecture, not in great technical terms, but in a simple manner, so that any one listening could understand him. He told us what a wonderful work the Lord had accomplished in the bee; how intelligently they work, and what an object-lesson they ought to be to us by the way they govern their communities. He gave a detailed explanation of their workings, and explained the functions and person of the queen. He concluded his talk by entering into the commercial part of the business, indirectly urging people to buy honey and keep bees, and, in general, by arousing enthusiasm in our industry. Thanks to Mr. Selser for his endeavors in the missionary field. The points he drove home in my mind are three: First, that the bee is one of the everlasting testimonies of the greatness of our Lord and his love toward man; second, the necessity of bees and honey in every community; third, the fact that honey is an essential in house-keeping. From my talk with several listeners I feel that Mr. Selser's work will bring fruit.

After the talk, all hands in charge were kept busy answering questions and giving descriptions regarding the various implements exhibited. General enthusiasm prevailed, and for the time bees were the center of attraction of the whole show. This showed me the importance and good work of exhibitions, which ought to be supported by all real bee-keepers. Any business man will agree that advertising pays, and here is where we all get the benefit of the efforts of those who exhibit. They advertise honey and bees in a general way. When a purchaser enters a store and asks for honey the chances are that he or she will not ask for Root's honey or Brown's honey, but for pure honey put up in a presentable condition. She has been taught that Root's bees can not produce better honey than Brown's nor Brown's better than Root's. If Brown or Root is careless in preparing and marketing his honey it will be a case of the survival of the fittest. At any rate, a demand for a good product has been created whereby the tumbledown lazy element will be eliminated, and the progressive, industrious fellow

elevated. What better can happen to bee-keepers?

Whitestone, L. I., August 27.

THE SWARMING TENDENCY ELIMINATED.

But this Year Every Colony Swarmed and Swarmed.

BY J. C. BALCH.

I have been trying for eight years to eliminate the swarming instinct in my apiary, and thought I had it down about right—only three natural swarms in eight years. Last year, instead of honey we had honey-dew (black strap), and nearly all the bees in the country died. A neighbor lost 29 out of 30 colonies, all run for comb honey. I lost 10 out of 27; and of the 17 left, there were only 5 that were in good shape the first of May. Then we had a scourge of caterpillars the year before, and the orchards were full of eggs of the tent caterpillar, and they began to hatch the last of April and first of May, and every fruit-grower sprayed with arsenate of lead, Paris green, etc., without regard to bees, apple-blossoms, or any thing else. The consequence was, a half or more of the flying bees were killed. I did not lose any hives or colonies, but they were kept back so that they did not get to breeding well till about the 10th of June. Then they began to swarm with but little honey in the hives (I had put on my extracting-supers and they had filled them with brood). I was surprised. I thought the bees were crazy, and they *were* crazy to swarm; but I hived the swarms on the combs that the bees had died on in the winter with diarrhea, and began to cut out queen-cells, all but one, in the hives that had swarmed, and they went to work and built more right away, while there were eggs in the hive, and in ten days they would swarm again. I could not explain that at first, but they swarmed all through the honey-flow, during which time I never saw honey come in so fast in my life. I had the best colonies built up three stories high with queen-excluder over the brood-chamber after the first of July, and I extracted every ten days. The two top stories were filled and sealed solid from top to bottom. I got from 17 colonies, spring count, over 1800 lbs. of the thickest and best white-clover and alsike honey I ever saw. I saved 24 swarms; but quite a number went to parts unknown. I cut out queen-cells all summer.

I have come to the conclusion that, if the weather and the season and the honey-flow are right, bees will swarm, for they were made so; and while I prefer to control the swarming habit as much as I can, when it comes a year like this they just go wild and do pretty much as they please if the boss is not in the yard with them all the time. I had a fruit-farm to look after, so I could not live with them.

Ferndale, Wash., Sept. 1.



SUMMER EVERGREEN PLANTED ON THE SOUTH SIDE OF EACH HIVE FOR SHADE. In a few weeks' time this bush, otherwise known as the "burning bush," furnishes good shade.

SLIDING HIVES INTO A CELLAR.

A Quick-growing Bush for Shade in an Apiary.

BY GRACE E. BICKNELL.

Mr. Geo. Bicknell (my grandfather) started in the bee business sixty-two years ago near Buffalo, N. Y., while not yet sixteen years of age. He and a neighbor boy bought a colony for \$3.00—their entire fortune—and carried it home through the woods, done up in a sheet that was slung across their shoulders. The other boy soon tired of the bees, so grandpa traded him a sheep for his share. He kept these bees one year and then sold them for \$25.00, there being five colonies in all by that time.

His next venture in the business was the following spring when he was fortunate enough to capture a swarm, and from that time on he has never been without bees. He keeps them simply for the pleasure they afford him. He has now forty colonies of Italians, mostly of his own raising. In all the years he has been engaged in the bee business he has never worn a veil nor a pair of gloves.

Last winter the colonies were wintered in a cellar, and only one died out of thirty, while other bee-keepers near by lost a large number. Although 78 years of age, grandpa manages to get his hives up and down the cellar-steps without assistance. He uses a sled on to which he can easily slide the hive, so that he can pull it to the outside cellar-steps. At this point he sets the sled on a slide made to fit the runners so that it is almost impossible for any hive to tip

over. In this manner the hives are gently slid to the cellar floor and then placed where they are to stand through the winter. In



MR. GEO. BICKNELL, OSBORNE, KAN., WHO HAS BEEN A BEE-KEEPER 62 YEARS.

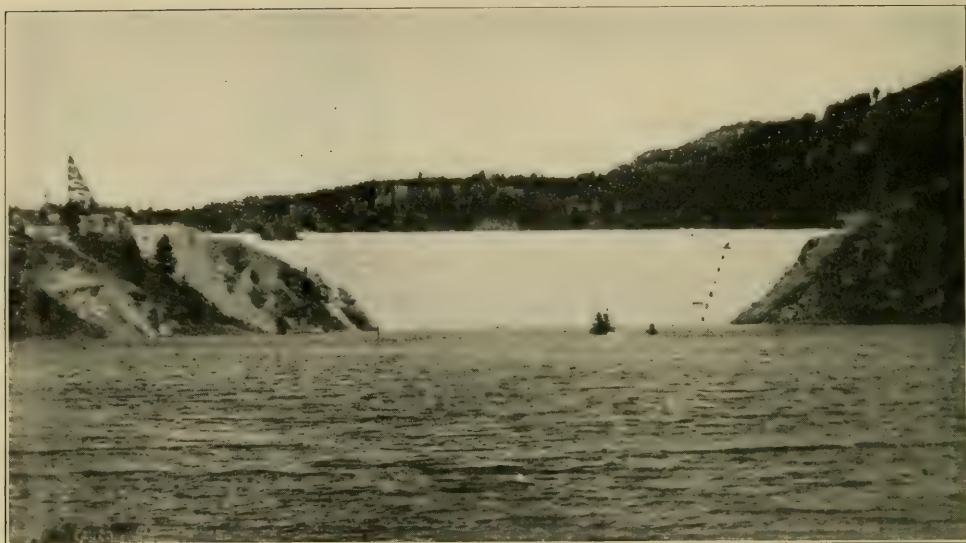


FIG. 1.—LAKE IN BOULDER CANYON, COL., HELD BACK BY THE IMMENSE CONCRETE DAM. This volume of water not only furnishes 21,000 horse power, but supplies water for irrigating 12,000 acres of land.

the spring they are pulled up the steps in the same manner.

The hives in the apiary face the east; and as there is no room for trees a bush known as summer evergreen, or the burning bush, is planted at the south side of each hive to protect the bees from the sun. This is very pretty, and furnishes a splendid shade within a few weeks.

Osborne, Kan.

PROSPECTS FOR IRRIGATION IN COLORADO.

How Irrigating-reservoirs and Power-plants are Combined.

BY WESLEY FOSTER.

For a number of years government engineers as well as engineers for private companies have been working on the problem of using the water of the Rocky Mountain streams for power in generating electricity and at the same time save the water for irrigation. If the reservoirs are built out in the valleys and on the plains, the power is lost unless the generating-plant is an entirely separate affair. This makes the expense much greater than if the reservoir is built high up in the mountains and the water piped down a thousand feet or more to the immense turbines or water-wheels which turn the electric generators, and then carried in ditches out to the land to be irrigated in the valley.

It is necessary for a power-plant to have a steady and constant supply of water throughout the year, and for this reason immense storage reservoirs are needed. Fig. 1 shows an immense concrete dam 18 miles up Boulder Canyon, built across the canyon at a narrow place. About 525 million cubic feet of water is impounded, or, in other words, 12,000 acre feet, which means enough to cover 12,000 acres of land with one foot of water. An acre of land requires about an acre foot to raise a crop successfully, so that this dam holds back water enough to irrigate 12,000 acres. But the water for irrigation is not needed during the fall, winter, and spring, although it is needed for power continuously, so the power company is building a large reservoir out on the plains, several miles from Boulder, to hold the water that must be used during the months when no irrigating is being done. This makes a very economical plan, and, when in full operation, the water will be saved for irrigating, and all the power from this fall utilized.

The dam above referred to is now like a great boulder or rock concrete, 177 ft. high, 624 feet long, 120 feet thick at the bottom, and 16 feet thick at the top. About 133,000 cubic yards of concrete were required, and many months' time elapsed during its construction. It is like a great rock wedge placed in a wedge-shaped canyon, and it so effectually stops the water that it makes a lake more than a mile long and about half a mile wide.

Fig. 2 hardly conveys an idea of the immensity of the affair. It might be likened to the pyramids of Egypt, but it will infi-

nity surpass them in usefulness, for it will water a thousand gardens and farms, and will furnish light and power to dispel the darkness and drudgery of farm and country life.

The water that is held in this upper reservoir, together with the one now being built out on the plain, will hold water enough for twenty-five or thirty thousand acres of land.

A concrete conduit, 3 feet in diameter and 12 miles long, carries the water from the upper reservoir down to a small regulating reservoir, almost overlooking the power station 1900 feet below. From this small regulating reservoir the water is carried in a steel pipe 56 inches in diameter at the top and 44 inches at the bottom to the power-wheels 1845 feet below. This pipe is $1\frac{3}{4}$ inches thick at the bottom and $\frac{1}{4}$ inch thick at the top. The water pressure is 900 pounds to the square inch, and the water strikes the buckets of the impulse wheels going at the rate of four miles a minute. About 21,000 horse power can be generated by this stream of water when running at full capacity. Some idea may be gained of the value of our mountain streams when it is remembered that this power-plant does not take all the available power in Boulder Creek; and among the Rocky Mountains there are thousands of streams with more available power than this one.

Boulder, Col.

A LAYING QUEEN UNDER THE BOTTOM-BOARD.

A Peculiar Case of Bees Refusing to Accept a New Queen.

BY DR. S. P. SCHROEDER.

Mr. E. L. Dickerson, of Bakersfield, Cal., had a colony of bees that persistently killed its queens, p. 564, Sept. 1. I had a similar experience two years ago. The colony had foul brood, but was of medium strength, so the 27th of May, 1908, I made an artificial swarm by shaking the bees in an empty hive in which I had placed but very narrow starters. I examined the colony in five days. The bees had built comb about four inches wide in the six central frames; but one-third, at least, if not more, was drone comb. I did not find the queen, but thought nothing of it, as the comb was so soft that a thorough examination was impossible. Ten days after the swarming I examined again, and I found no young brood nor eggs, nor the queen. I concluded that the queen got killed during the shaking process; and as I had several nuclei with young laying queens I gave this shaken colony one, and the bees ate her out in two days, only to ball and kill her immediately. I gave them another laying queen and waited four days before I liberated her, after first thoroughly smoking the colony. That queen also lay



FIG. 2.—LOWER VIEW OF THE GIGANTIC CONCRETE DAM WHICH HOLDS BACK 525 MILLION CUBIC FEET OF WATER IN BOULDER CANYON, COL.

The illustration fails to convey a true impression of the scene. Instead of being a lake of water, the white portion of the picture is really the side of the dam,

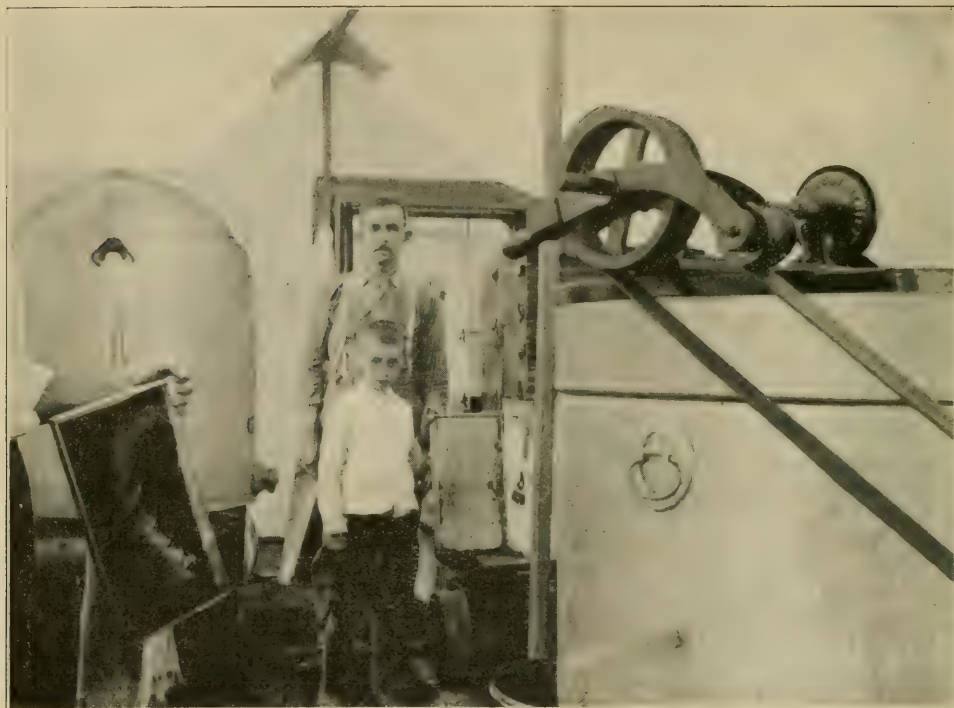


FIG. 1.—INTERIOR OF J. H. M. MARDEN'S EXTRACTING-TENT, APOPKA, FLA., SHOWING THE EIGHT-FRAME POWER EXTRACTOR, THE STRAINER, AND THE HAND-CAR USED IN CARRYING SUPERS TO AND FROM THE TENT.

dead in front of the hive. Then I gave them a comb of brood. They started several good queen-cells, but just as soon as they hatched from their cells they were balled and killed. Then I concluded I would join it to a neighboring colony which was not so strong, and, of course, this one was weak. When I tried to move it I noticed that some of her bees I had shaken down behaved strangely—lifted their bodies, buzzed, and walked under the bottom-board. I found about a handful of bees clustering under the bottom-board, in the center of which was our old clipped queen which had evidently remained there from the time I shook them, which was then six weeks. She was located just where the alighting-board presses against the back part of the bottom-board, and there was a crack barely large enough for the bees to press through, but too small, apparently, for the queen.

Well, though the colony was weak by this time, and the bees old, I thought, as a matter of experiment, I would see what she would do if placed on the combs with her bees. She almost immediately began laying; but the bees built four or five fine queen-cells. I thought they would supersede her; but she filled the combs so full of eggs in a short time that the bees, I take it, concluded that she was equal to any young

queen, and the queen-cells were torn down again before young queens issued.

From the foregoing experience I conclude that, when we have a colony that kills its queens that are introduced, very likely they have a queen hidden from our view, but which, after a diligent search, an eye trained for observation will, in the majority of cases, find. It also proves to me that the non-laying of a queen is not the only cause for superseding.

Nashville, Ills.

EXTRACTING HONEY IN A TENT.

Something about the Shed Apiaries of Florida.

BY I. H. M. MARDEN.

Last season I used a tent for extracting my honey. So far as the light is concerned, it is all that could be desired; but I find that there should be a separate canvas a little above the tent to keep the sun from shining on it and making it too hot inside. On one day it was so warm that paraffine would soften enough inside the tent to run. The tent stands at one end of my shed apiary, which is 10 feet wide by 150 feet long—a row of hives facing out on each side. In the middle, between the two rows of hives, is a track, and I use a car to carry the su-

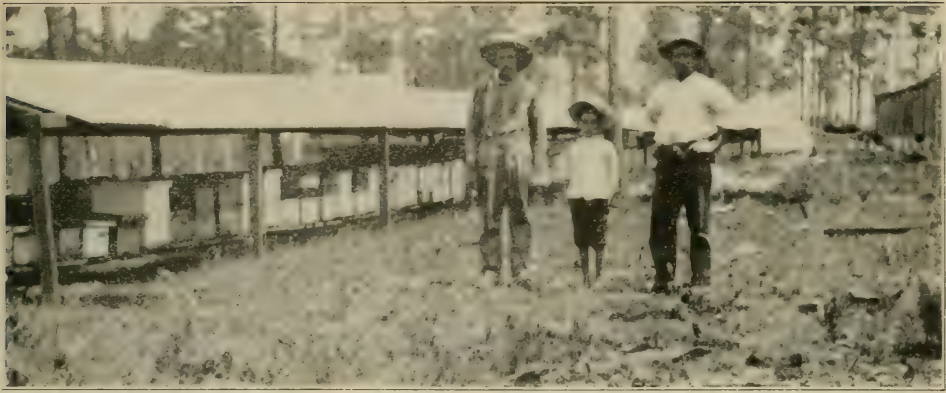


FIG. 2.—MARDEN'S SHED-APIARY, 150 FEET LONG, WITH THE EXTRACTING-TENT AT THE FURTHER END.

pers up to the end where the honey is extracted in the tent, and then the empty supers are also brought back to the hives in the car. The illustration of the interior of the tent shows the car with a load of supers. I can carry twelve supers at a time and run them into the tent. I move my bees three times a year, and I use the car for moving the hives out to the wagon, and at the other shed I have another car which I use in the same way. The framework of the shed is covered with a good roof of galvanized iron.

As shown in the illustration I use a two-frame extractor-can for straining the honey. Over the top of the can I put a piece of galvanized wire cloth, and secure it with wire around the can. Over the wire cloth I spread the cheese-cloth strainer. As fast as one cloth gets clogged I fold it back and put on another one without stopping the work. This can is high enough so that the

strained honey from the gate at the bottom may run directly into a barrel.

Our cappings are melted in a capping-melter, and the honey that goes through the melter is kept separate in five-gallon cans; and when there is enough of it I run it through a strainer, put it in a barrel, and sell it as dark honey.

The extractor is eight-frame, run by gasoline-engine, which stands on the floor out of sight.

Apopka, Fla.

THE METCALFE END-BAR HOLDER.

A Handy Device for Putting up Section-holders and Shipping-cases.

BY O. B. METCALFE.

The drawing illustrates a contrivance which will hold the end-pieces of section-

holders in exact position while the slotted or bottom piece is being nailed to them. Without any alteration it will also hold the two ends of a comb-honey shipping-case in exact position while the back board is being nailed on.

a and *b* are small wooden fingers fastened to *f* by screws *g* and *h*. They are left just loose enough to turn easily on the screws. The contrivance may be made to stand up on the bench by nailing to its back two blocks which taper off to the bench, and in turn nailing these to the bench.

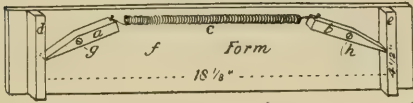
To use it, pick up



FIG. 3.—LOOKING DOWN THROUGH THE APIARY TO THE DOOR OF THE EXTRACTING-TENT.

A hand-car runs through the middle of the shed, on which the supers are carried.

two end-pieces of a section-holder or shipping-case (one in each hand) and thrust them down between the cleats *d* and *e*, and the ends of the fingers *a* and *b*. This will stretch the spring *c*, and its recoil force will, by means of the fingers, hold the two pieces firmly in exact position for nailing.



Only a few dimensions are given, because the other dimensions may be varied to suit the material at hand. It is important that the cleats *d* and *e* be exactly $4\frac{1}{2}$ in. for putting up standard-size section-holders so they will hold the bottom piece exactly in place, and yet will not stick up far enough to hinder in nailing.

I bought a few section-holders last spring with thin end-pieces which were evidently intended to be nailed slightly back from the ends of the bottom-piece. To use the above contrivance for putting up such section-holders it is only necessary to nail to the cleats *d* and *e* two thin slats of the thickness it is desired to have the end pieces set back, and not high enough to interfere with nailing on the bottom piece.

I made one of these contrivances two years ago in about twenty minutes, and I think I am safe in saying that it has since saved at least \$15.00 for us in my time and that of hired help, besides the great satisfaction of having the work well done.

Just who originated it I do not know, but the honor perhaps belongs to a man by the name of Gathright, who kept bees in the Mesilla Valley before my time as a bee-keeper here, for I found at his old place, among some of his old bee-supplies, some such contrivance, but much smaller.

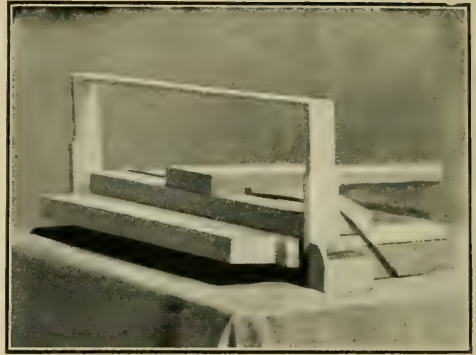
Mesilla Park, N. M.

FASTENING FOUNDATION IN SHALLOW FRAMES.

A Machine Working on the Principle of the Parker Foundation-fastener, which Serves Admirably in Securing Foundation in Shallow Frames; a Great Convenience for Bulk-comb-honey Production.

BY J. J. WILDER.

In the production of bulk comb honey it is necessary, of course, to secure foundation time after time in frames from which combs of honey have been cut. The double-groove-and-wedge plan for this purpose is hardly satisfactory, since it is so difficult to clean the old wax out from the grooves. I have made a little machine which works on the principle of the Parker foundation-fastener for securing starters in sections; but it serves the purpose far better for fastening either starters or full sheets in shallow frames, because the top-bars of such frames are rough,

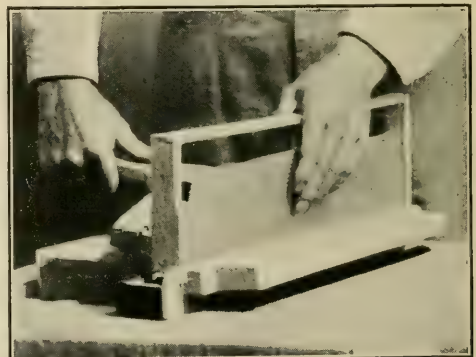


Wilder's fastener for securing foundation in shallow frames.

and the longer they have been used the better the fastener works. It makes no difference whether the grooves in the top-bars are filled with wax or not. If they are, this machine fastens the sheet of foundation to the wax; whereas if the grooves are open it fastens the foundation to the edge of the groove so that, when the sheet is turned at right angles to the under side of the top-bar, it hangs in the middle of the groove.

It might be argued that it is a waste of foundation to crowd it into the wood as this device does; but I find that more than two rows of cells are rarely used. On the other hand, the loss of wax by other processes of fastening is far greater. Even with the melted-wax plan I usually use from three to five dollars' worth of wax each season, and then by this plan there is a very thick line of wax at the top of the honey when it is removed from the frames. My plan overcomes this objectionable feature.

Furthermore, with the melted-wax plan there has been no end of breaking down of starters and full sheets of foundation in handling supers before they are on the hives and even after the bees are in them. The reason for this is that there is only a very thin edge holding the sheet of foundation,



The machine in operation, showing that it works on the principle of the Parker foundation-fastener for putting starters in sections.



FRED HOLENBECK'S METHOD OF PACKING THAT RESULTED IN NO LOSS LAST WINTER.

and many times this edge is weakened by hot wax. The melted-wax plan, moreover, allows no swing, and consequently many sheets give way and drop down.

By the pinching or rubbing process, as employed in my machine, a fair amount of swing is allowed, and shallow supers with foundation thus fastened can be roughly handled and even thrown on wagons and hauled for miles to the apiaries without doing any damage. We have often had supers fall off the top of the wagon to the ground, and yet the foundation did not break loose. As a precaution, however, we usually carry along the machine when taking loads of supers to the apiaries, and place it on the top of a hive in some shady place. Then if, for any reason, any of the sheets have given way, they can be quickly put back with little loss of time.

The fastener is simple, and any mechanic could make it in an hour's time after the proper material has been obtained. The material is about $\frac{1}{8}$ inch thick. The piece attached to the lever that serves to press the foundation into the top-bar should be made of hard wood; and the wire, used as the movable hinge, should be heavy enough to stand the strain. I used a wire hoop from a sugar-barrel, the ends being turned over under the machine, and securely fastened with staples.

It is easy to fasten foundation with this machine. The board that presses in the wax should be dampened occasionally on the under side where it comes in contact with the wax, so that it will not adhere to it. The lever should be raised about the same as the one on the Parker fastener; but

the foundation should not be pressed hard enough to mash it the instant the lever touches it, as this would be likely to cut it in two. There should be just enough pressure at the start to make the wax adhere to the wood, and then the lever should be pulled up gradually until the wax is smoothed out on the top-bar.

Cordele, Ga.

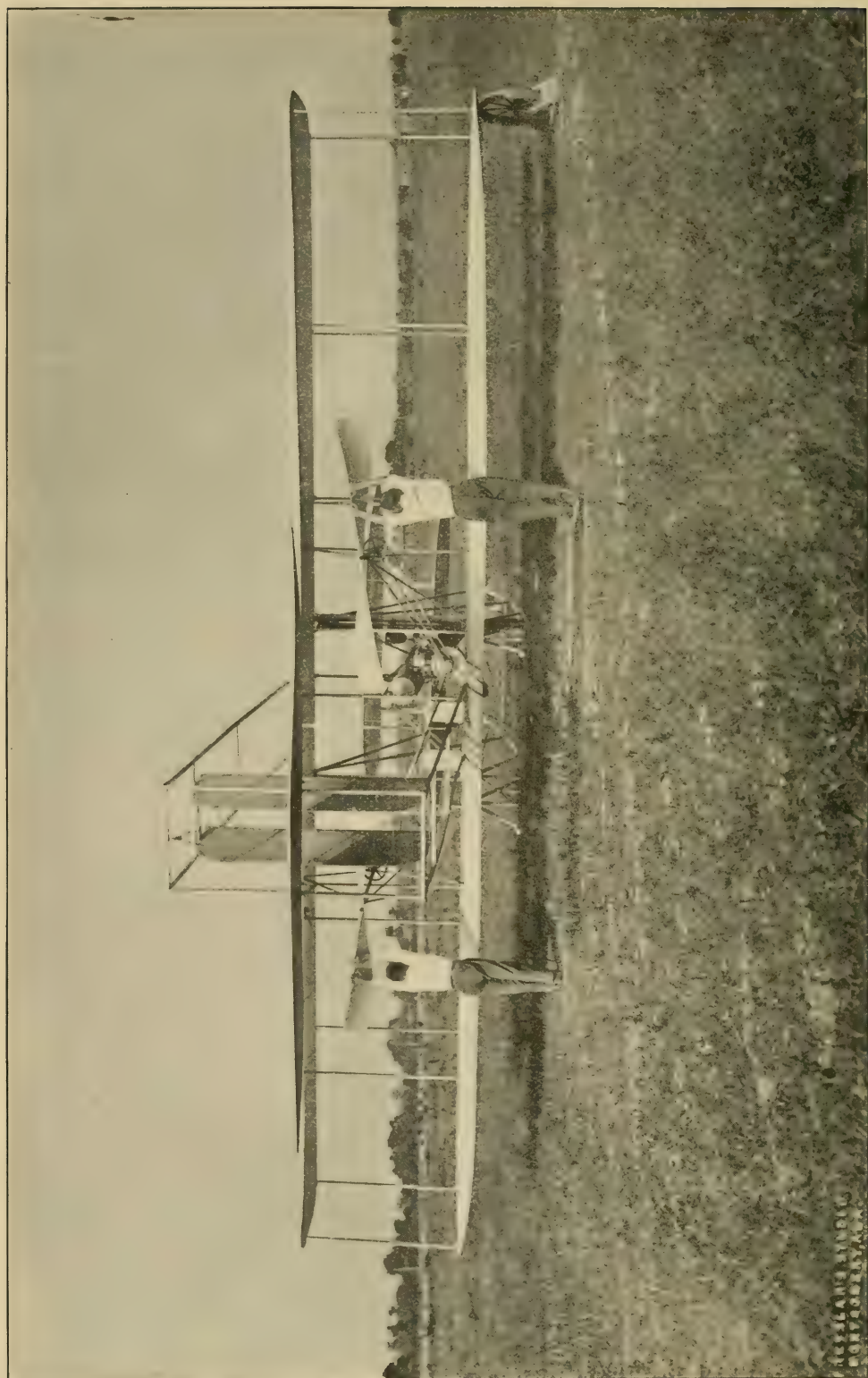
A WHOLE ROW OF HIVES COVERED WITH TAR PAPER FOR WINTER.

BY J. C. BOGARDUS.

I am sending a photograph of Mr. Fred Holenbeck's colonies as they were last winter. They were packed with leaves, and covered with tar paper. Every colony came out fine last spring.

For protection a piece of carpet is cut to fit over the frames under the cover. This lies flat on the top-bars. Between and back of the hives dry leaves or buckwheat straw is packed, and then more of the material placed on top over the covers. The back is made rather higher than the front so that when the tar-paper roof is put on, the water may run off. The tar paper is cut in pieces and tacked on with lath at the top and bottom, a hole 2x6 inches being left in the front to give an entrance for the bees of each hive. The entrances, which face the east, are contracted by entrance-blocks to the size 2x $\frac{7}{8}$ inches.

Horseheads, N. Y., May 20.



WRIGHT BROTHERS' UP-TO-DATE FLYING-MACHINE FOR TWO PASSENGERS.

REPLANE BYNDIC
WRIGHT BROS. CO.

WHAT IS MEANT BY "SEALED COVERS" AND "ABSORBENT CUSHIONS"?

How the Details Affect the Results of the Two Plans.

BY E. WRIGHT.

Your editorial remarks on sealed covers vs. absorbents, April 1, give me a strong desire to "butt in" and ask just what you have in mind when you speak of these two things. Do you do away with the bee-space above the top-bars when you use cushions? Do your conclusions apply to single-walled hives?

You say it seems to be proven again, that, for your locality, sealed covers have the preference; that the bees under them winter perfectly. And you say that you have a suspicion that those who so loudly champion the absorbing-cushion plan of wintering may not have tested the two plans side by side. Pardon me; but have *you* tested the two plans, other conditions being equal?

Year after year you have been making statements about the two plans which are not clearly understood by me; and I am wondering how your other readers understand you—that is, what do they picture in their minds when you say "sealed cover" and "absorbent"?

There is a very grave difference in results between a cushion laid directly upon the top-bars and a cushion over a Hill device, especially with single-walled hives; yet you appear to ignore this point. In my opinion a bee-space above the top-bars is of more value than a sealed cover. Oil-cloth makes a sealed cover without the bee-space. In testing this wintering problem we should all be careful not to create a condition in one case that does not exist in the other, such as having no bee-space in one and not in the other.

Where a Hill device is used, there is a clustering-room for zero weather which I believe to be worth more than a mere bee-space. If you use a Hill device, then what kind of quilts do you use? This is a most important factor if you use a light packing like forest leaves. I had one colony die of mere "coldishness" with a new muslin quilt with a Hill device and a foot of leaves. There was a draft right through that hive. Another colony came through "a whooping" under the same conditions, except that it had a heavy canvas quilt which prevented all draft. With cork-dust cushions it is not of so much importance what the quilts are; and the same might be said of fine pine sawdust; but heavy duck or canvas quilts should be used with light packing, such as cut straw, coarse planer shavings, etc.

A colony on closed-end L. combs is almost sure to die of starvation with plenty of honey in the hive in a hard winter with a quilt directly on the top-bars, and without a winter passageway; and I am not sure, but I think that Hoffman frames will give nearly the same result in single-walled hives.

Now, when you tell your readers that sealed covers are best "in your locality," what proportion of those readers picture a chaff hive in their minds in connection with the remark? Perhaps the majority, but how about the minority? I know of but one man who uses chaff hives around here. I let ten chaff hives stand empty this winter because I have so much faith in your Hill devices on single-walled hives, and yet you are not booming these things at all.

Bees packed in chaff hives *ought* to winter in spite of sealed covers in Medina, and no doubt would make a better showing than bees with a porous burlap quilt which allows a draft to suck the vitality of the colony.

I have succeeded up to date in wintering a three-frame nucleus (closed-end frames, spaced 1½ inches center to center) under a heavy canvas quilt with a miniature Hill device, warm dry packing above, with a tight bottom-board, and a half-inch-square entrance. This was in a single-walled hive with no chance for a draft through it. I always give good ventilation above the cushions to keep them dry. I just *know* these bees would have been dead by now had they had what I picture in my mind when you say "sealed cover."

I know a man who says he winters under sealed covers; and when I went to see his bees I found that he called oil-cloth a sealed cover. Another man I know says he winters with sealed covers; and if you examine his bees you will find the sealed cover five inches above the top-bars. He puts an empty shallow super under the cover in order to give his bees clustering room. With such a plan he says he never is bothered with dampness or mold. Here are two extremes of sealed cover.

Last fall I left ten colonies under sealed covers with a bee-space above the top-bars and with warm packing above; and these bees suffered severely from dysentery, and the combs were damp and moldy, with an entrance ¾ by 12 inches, and a ¾-inch space under bottom-bars. No such damp conditions existed with about seventy colonies with absorbing cushions and single-walled hives. Wouldn't it be folly for *me* to use sealed covers, even were I in Medina?

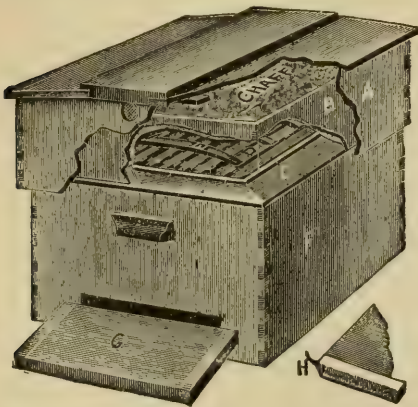
Morton Park, Ill.

[It is very evident that you have read but little of what we have said on the subject of sealed covers vs. absorbent cushions; and it would appear that even what you have read you went over so hurriedly that you must have missed much of what we have written. In the very editorial to which you refer, one of your questions was answered very explicitly. Referring to the absorbing cushion and sealed covers you ask in the last sentence of your second paragraph, "But have *you* tested the two plans, other conditions being equal?" For answer to this question please turn to the editorial to which you refer, viz., April 1st GLEANINGS, page 207, last paragraph, first column, where you will find, "When it is remembered that we have tried these two forms of wintering (sealed

covers and absorbents) side by side for a series of years, with the odds nearly always in favor of sealed covers, the reader can naturally see why we champion that plan, at least for our locality.* Now for the "other conditions being equal," note that we say, "The great majority were packed in double-walled chaff hives, and a few in single-walled hives were wrapped in paper winter cases and a few in wooden winter cases." While we did not say in this connection that the sealed-cover colonies and the absorbent-packed colonies were in exactly the same kind of hives, the reader could hardly infer anything else in view of all that was said in that connection. Then you ask in this same article, first paragraph, "Do your conclusions apply to single-walled hives?" The sentence just quoted, which you must have hurriedly skipped, ought to answer that question.

With regard to sealed covers we have repeatedly mentioned the fact that we use a plain thin board, usually of one solid piece, tin-bound at the ends. This is laid on top of the brood-nest of the double-walled chaff hive early enough in the fall for the bees to seal down hermetically, and this sealing is not broken until the next spring.* If you are at all familiar with bee-supply catalogs you would know that this would leave a bee-space of approximately $\frac{1}{8}$ inch between the sealed cover and the tops of the frames beneath.

When we refer to absorbing cushions we have *always* meant the plan that is spoken of in the various editions of our A B C of Bee Culture. Turn to almost any edition, and you will find under the general head of "Wintering" a cut of one-story double-walled chaff hive with a Hill device, showing the whole plan of wintering under absorbing cushions in connection with double-walled hives. We reproduce the cut here.



We used the absorbing-cushion (or tray) plan for years before we adopted the sealed-cover idea; and when we used absorbing plan

we always used the Hill device, or some device equally good, to hold the cushion one inch or so above the frames, so that the bees will form a winter nest directly beneath.

Whenever we worked this plan we used a burlap cover. Instead of a cushion we used a tray with a burlap bottom tacked on loosely, so that, when it rests upon the Hill device, it bulges upward. The packing material is then poured on top. A telescope cover that does not come in contact with the packing material covers the whole. When using the absorbing plan we never allow the cover to come in contact with it, as this would defeat to a great extent that plan of wintering.

Apparently you have tried the two plans, but on a very small scale, if we may judge from your fifth paragraph; and right here you give one very strong argument in favor of the sealed cover. You say that heavy duck or canvas quilts should be used. Canvas and heavy duck would be largely impervious to moisture, especially after they had been used a few times. While they might possibly become a little damp the moisture would not pass through them readily. If they did, they would not be the prevailing material for making tents that have to stand rain and weather.

If you will take the time to read over what we have said on this subject, particularly what is said in the last edition of the A B C and X Y Z of Bee Culture, you will understand the reason why some people get better results with absorbing cushions, and why others succeed better with sealed covers. We admit that in a *cold* climate subject to deep snows the absorbent-cushion plan is to be preferred. One reason of this is, that deep snows are liable to close up the entrance. A closed entrance with a sealed cover means death to the colony in nearly every case. The other and chief reason is that, in a continuously cold climate, the atmosphere is dryer. In a milder climate, just south of Lake Erie, as we have it at Medina, there is too much of mild weather, and with it an excess of moisture to make the absorbing plan equal to the sealed-cover method.

We have tried both plans side by side under *precisely the same conditions*, same kind of hives and packing material, for some ten or fifteen years. We have had a number of different apiarists at Medina, and you can ask any of them and they will tell you that the sealed cover gives better results at Medina.

This whole question is one that is dependent upon locality, somewhat upon the hive, the depth of the cushion, and the material of which it is made. We think we know something about the absorbing plan, because we used it for nearly twenty years before we adopted the sealed-cover way.—ED.]

around, making a hermetic sealing, or what we call a sealed cover." This was accompanied with a series of illustrations, two of which showed the sealed cover and how applied. You will also find the same thing in the last editions of the A B C book. We do not see, friend Wright, how we could be any more explicit.

*In GLEANINGS of last fall, Nov. 15, page 700, we went into the minutest details. We quote: "The apiarist lifts off the tray and under it we find a super cover with tin binding for the ends to prevent warping. This is sealed down with propolis all

THAT NEW BEE DISEASE.

Is Not the Trouble Caused by the Bees being Confined too Closely After Working Heavily on Some Particular Blossom?

BY JAMES M. PULLEY.

The correspondence by Catherine Beattie, June 15, and the more recent one of E. F. Robinson, p. 516, Aug. 15, are interesting to me because of a similar occurrence recently in my own yard, and in a greater or less degree in several other small apiaries in this locality.

Personally I can not attribute the trouble to any particular disease, but I think it is owing to bees being more or less confined when they are full of nectar from some particular source. In the case of the bees in my own and neighboring yards this year it was while they were working on blackberry bloom that the trouble occurred, and the weather was decidedly wet; yet the blooms were so attractive that the bees worked them every possible minute from early morning until dark; and with the approach of rain there was a hurried flight for the hives.

This, in my opinion, gave the bees no chance for inverting the nectar, which seemed to have in its uninverted condition the tendency to bloat, such as your previous correspondents referred to. Many bees could be found lying around, apparently in the same condition that the yellow-jackets are in the fall when they find quantities of ripe fruit on which they "glut" themselves, and which seems to ferment and prevent their rising on the wing; and when they get into a very advanced condition from the effects of the apparent fermentation there is a case of what looks like paralysis, with only a poor attempt at flying, or even only a vibration of the wings. I have on many occasions killed scores by treading on them (the yellow-jackets), and it appears to me this bee trouble is identical, and to which I would pay no attention were it not for the fact that a hive of bees can be decimated fifty to eighty per cent (estimated) in a week or ten days, and it is the most noticeable in a newly hived swarm where there is no brood hatching to take the place of the failing bees, while at the same time the queen will be shrunken to the size of a virgin; and the apiarist who does not recognize it will expect to see signs of supercedure, which does not take place; but it will so badly decimate the colonies affected that the chances of a surplus for the season are almost hopeless. The harder the bees work, the worse the case; consequently the best bees are the worst affected. Left alone, the bees slowly recover, and the queen resumes her normal condition; but it is a severe blow to the whole apiary.

I do not know if feeding good sugar syrup at such times would effect a cure or modify the trouble. I throw it out as a suggestion in the hope that some may try it, and that

our best queens may not be condemned for producing a disease when I really believe they are producing the more energetic workers which get poisoned by the rankness of the nectar gatherer¹ because they can not take the necessary exercise immediately upon gathering it, so that it can be inverted without delay.

I submit this to your readers, as it appears to have come under my observation on several occasions — not so much at one particular season of the year, but at several, and would apply at any reasonably moist time when bees would have time to gather a load of nectar and hurry home without a chance to invert it properly.

Melrose, Mass., Sept. 2.

YOUNG BEES NEEDED TO INSURE SAFE QUEEN INTRODUCTION.

BY WM. M. WHITNEY.

On page 564 Mr. E. L. Dickinson gives an interesting account of failure in attempting to introduce a queen to one of his colonies, and asks the editor or some reader to explain why this particular colony should be so stubborn in the way of accepting a queen. Now, I'd like to give my idea as to the cause of the trouble. I gather from his account that this colony is made up, or nearly so, of old bees. He says they were filling their comb full of honey, and not a cell having an egg. There were no nurse-bees, or but few, to prepare food for larvæ. Why should there be? There were no larvæ to feed. Evidently there was a fair honey-flow on, and the whole force was busy storing supplies. This colony might have developed laying workers, but that would depend upon the season of the year. If *late* in the season it would not be likely to. But what is the remedy in such a case? Before attempting to introduce a queen, which should be a laying one, smoke the bees sufficiently to cause them to fill themselves with honey, which should be done toward night, when they are likely to be all at home; then move the hive to one side and place on its stand another with a couple of frames of brood in all stages of growth, taken from some hive that can spare it, being sure that there are plenty of hatching bees. Over these, in the center of the hive, place the caged queen as per instructions; then shake all the bees in the parent colony on to a cloth at a distance from the stand and let them return at their leisure, filling up the hive on the parent stand with the frames after the bees are shaken. I venture the opinion that there will be no killing of the queen when she is released from the cage if this method is adopted.

Mr. Editor, your mistake in the case you cite, I opine, was in giving to the colony a frame of "freshly laid eggs" instead of a good supply of hatching brood to furnish nurse bees.

Batavia, Ill., Sept. 8.

AMERICAN FOUL BROOD.

Some Proof that Henry Stewart has It; a Reply to Geo. M. Steele, Page 531, Aug. 15.

BY HENRY STEWART.

At the National bee-keepers' conventions I have seen samples of American foul brood which looked and smelled identically the same as that does which I now have. Furthermore, I have sent samples of the disease in my yard to Dr. E. F. Phillips, who has pronounced it American foul brood. I have also seen samples of American foul brood at the apiarian department at Washington. State Inspectors Smith, More, and Piles at different times have inspected my bees, and on each occasion pronounced the disease American foul brood. It looks like the picture of the American variety; and if there is a bad case of it in the yard, one needs only to follow his nose in order to be led directly to the hive. Yes, I am quite sure I have the genuine American foul brood.

Mr. Steele says that bees can not clean out the dead brood having the bad odor of the American foul brood, and that I will, therefore, have to retract. All right; no one could be more ready to retract than I, when convinced that I am wrong; but I should like to inquire whether this statement by Mr. Steele is founded on actual observation or borrowed from the statements of others. If borrowed (which I surmise) it might be well to go to the bees for proof.

There are a great many things about foul brood that I do not know, and some other things that I am not sure of; but if there is any one thing about the subject that I do know positively it is that bees can and will and readily do clean the ropy bad-smelling brood of the American disease from their cells, and any one else can be just as positive as I am if he will just go to the bees for proof. It does not take a scientist to prove this, as any one can find out for himself. It is not too late this fall. The worst foul-broody comb that can be found should be placed over a queen-excluder above a foul-broody colony of good strength. If the results are watched, the foul-broody matter will be found disappearing, and patches of nicely polished cells taking its place. The longer the time the larger these patches will become; and if the conditions are at all favorable it will finally take a good deal of hunting to locate the least evidence of foul brood in this once rotten comb.

Outside of a honey-flow I am not positive that my plan will always work; but I know that it sometimes will work, and it is my belief that it generally will if not always. I base this belief upon the experience of the queenless foul-broody colonies mentioned in my first article, page 415, July 1, as well as on my observation of the bees cleaning up the outside combs as the brood-nest is contracted after the honey season; and, finally, on my experience this summer, which

was as follows: Warm weather and the honey-flow began here June 10. From June 15 to 20 I placed all foul-broody combs above queen-excluders, keeping the queens below. The honey-flow continued good up to July 1, when the drouth dried up the clover, and my scale hive quit gaining. July 10 the scales showed a loss of three pounds. This was a new condition for me. The honey-flow was done, and the combs were only partially cleaned up, as an examination showed in a large part of the hives that the foul brood could still be seen below. What to do I did not know; so in most cases I did nothing except to watch results. The drouth continued; conditions went from bad to worse; but the cleaning up went on, and about August 1 I extracted the combs, and not a sign of the disease could be found in any of them. I then put them back on the hives for refilling. There are about two hundred of these combs. When they come off the hives again, no effort will be made to keep them separate, and they will be lost sight of with the thousand or more combs which were previously foul-broody, and which are now being used as extracting-combs. Conditions could not be worse than they have been here this summer, the drouth at this date (Aug. 29) being still unbroken. We have not had a good rain since May. After extracting the white-clover honey the extracting-combs were drained dry and the honey taken below. If it were true that I have been working under a delusion, and the once foul-broody combs have not been cleaned up, can any one imagine the condition my colonies would be in? The word "rotten" would not express it. However, I have just inspected each colony in my home yard, and out of two hundred I have found but six new cases, and these probably came from my neighbors' foul-broody hives, and not from the cleaned-up colonies.

Prophetstown, Ill.

[Mr. Stewart is not only an extensive bee-keeper but an expert. What he can and has done, others might fail in. It is our opinion that the average bee-keeper had better not try to save combs of American foul brood. There is too much risk.—ED.]

ELIMINATING THE SWARMING IMPULSE.

What may be Accomplished in Other Animals by Careful Breeding.

BY W. E. FLOWER.

On page 529, August 15, is an article by M. E. Pruitt on hereditary influences, and I wish to take exception to some of the deductions made. In my opinion the swarming impulse can and will be eliminated just as soon as we can control the mating of the queen and drone. Cutting off lambs' tails is not breeding, neither does it come under the topic "heredity." Jonas Webb, by careful breeding, eliminated the horns from the Southdown sheep, securing a superior

breed of mutton sheep. Has any one tried to *breed* the tails from lambs? Would this be more difficult than breeding the tail from a cat? It is a fact that many cats have no tails. When we can once get control of the mating I firmly believe that it will be just as easy to eliminate the swarming tendency from bees as it was to eliminate the desire to sit, brood, or incubate from the Spanish Leghorns, Minorcas, etc., and produce a breed of fowls from which the natural desire to incubate had been practically eliminated.

I believe it is generally conceded by competent authorities that our domestic chickens are descended from the wild jungle fowl of India, a small bird weighing about three pounds. From this fowl, man has produced an almost endless variety of distinct breeds, from the gigantic Cochins and Brahmas to the diminutive Bantams—some having three combs, some rose combs, and others single; some having feathers on their legs; others, five toes; some, the crest and beard; some white and others black; some are spangled and others laced. The keynote to the whole situation is the control of the mating of the breeding stock. Some cattle-raisers practice dehorning, while others breed cattle that never have horns.

In conversing with the late Mr. Pratt, of Swarthmore, Pa., on this subject, I found him thoroughly in accord with the foregoing opinion; and had his life been spared a few years longer I have no doubt it would have been successfully worked out. This is one of the things that I hope to see the Philadelphia Bee-keepers' Association give their special attention to in the near future. If any one is skeptical about this, let him turn to the 30th chapter of Genesis, and, beginning with the 31st verse, read carefully to the end of the chapter. I believe it would take less time with bees than with animals, because several generations could be produced in a single season.

Ashbourn, Pa.

MORE ABOUT THE CONDITIONS IN THE OZARK MOUNTAINS OF MISSOURI.

BY OTIS A. GRIFFITH.

I have received letters from almost every State in the Union, asking me to tell the truth about the Ozark Mountains, and I feel it my duty to give the facts. This is a rough hilly country with rocks, steep hills, high bluffs, and with nice valleys which are very rich, the valley land all being in cultivation. Not half of the hilly land is in cultivation or even fenced off. Half of this country (Barry) is very rough, and there are thousands of acres of this land that will never be of any value, on account of so many sharp ravines and steep hills, which are densely covered with fine oak timber, cedar, and pine. The northern half of the county is as smooth as Iowa or Illinois land, and has six good railroad towns, Cassville being the county-seat.

This hilly land will produce corn, clover, or wheat as well as vegetables of all kinds, if places can be found that are not too steep. The north and east slopes are very fine for all kinds of grain.

We have about ten counties in this part of Missouri that are very rough, including Barry, Stone, McDonald, Newton, Taney, Texas, Dade, and Green. All of the southwest part of Missouri is rough, yet we have a fine mild climate with short winters. We have good roads, schools, and churches.

Those who advertise Missouri will do well to invite strangers to come to the Ozark region and *rent* a small farm the first year and be exceedingly careful how and where he spends his money until he becomes accustomed to the natives, as he is liable to leave the second year a broken and disheartened man. The land sells for from \$3.50 to \$40.00 per acre according to the location. A thousand dollars will buy a good home; but the man buying it must know something of the people, as those ten miles from the railroads are very different from those close to town. Those wishing to come to this country to make it their home should keep out of the hands of the land agents, to avoid getting a big elephant on their hands.

This is a fine bee country, but there are only a few who keep bees as a business. I have been a bee-keeper for many years, and I honestly believe if we had the right kind of men this would be one of the best States in the Union for honey and bees. We have fine spring water, and wild flowers everywhere, white clover being the main source of honey. Bulk or comb honey is in great demand at 15 cts. a pound, fancy honey bringing 20 cts.

In response to my short article, page 378, June 15, describing buckwheat-raising in the Ozarks, I have received over one hundred letters asking for full particulars, one lady in British South Africa asking for the truth about the conditions here. I hope that the above will answer these questions.

Scholten, Mo.

Condensing Moisture on the Front Hive-wall During Winter.

Packing colonies for winter with the thickest packing on the top, so that the moisture will condense on the sides of the hive, has been recommended. Mr. C. L. Fisher, of Central Bridge, New York, has a winter case with a 7 x 9-inch hole cut in the front so that the front side of the hive is exposed to the cold air, thus condensing the moisture at this point so that the water will run down and out of the entrance on warm days. He has made a good record with these cases. I myself borrowed 38 of the cases last fall, and successfully wintered 36 colonies, and found them better than any thing I had ever tried before. One of the two that died was very weak last fall, and I think that mice were partly to blame for the other. I should like to hear from other bee-keepers as to whether this plan has ever been tried, and, if so, with what result.

Sloanesville, N. Y.

R. V. Cox.

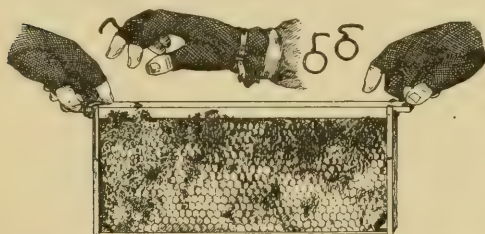
[It would seem to us that the necessarily lower temperature in the hive, that would result from having the front wall exposed to the cold air, would offset any advantage of the moisture condensing in the manner described. In other words, would not the remedy be worse than the disease?—ED.]

Heads of Grain

from Different Fields

A Hook Worn on the Finger to Help in Pulling Out Frames.

I have a little tool that I have found very useful in removing frames from hives, especially when they are filled and there are a lot of bees in the way. I take a piece of telegraph wire or other stiff wire and bend a ring to fit over the first or second finger sufficiently close so it will not fall off (over the glove if used). Bend a hook to reach under the end of the frame. It may pass through the small staple, which secures it from slipping off. After hooking securely the frame is easily raised an inch or two, when it may be grasped by the thumb and finger, and pulled out. The hook slips down between the ends of the frames quite easily; and I find it a great help when I wish to handle bees quickly, more especially if there is a strong colony and a lot of propolis. One great convenience is, it may be left on the finger without in any way interfering with the operator while at work. Thus there is no danger of its getting lost.



This is an ideal spot for bees—perpetual summer with a constant supply of wild flowers; but I find it difficult to keep them working. They are inclined to knock off as soon as they have accumulated a small supply, and take things easy. There is an abundance of wild bees found in small swarms in all sorts of places—crevices in rocks, ant-heaps, and even mole-hills in the ground. They often shift from place to place as the season changes—to the mountains in summer and to the valleys in winter.

R. ROVING.

Caledon, Cape Colony, South Africa, July 10.

Full Sheets of Foundation in Frames Fastened to the Bottom-bar.

I have trouble in getting my combs built down to the bottom-bars. I have been using full sheets of foundation, wired in, for a year or two, and now the combs are beginning to stretch, and cells toward the top-bar are becoming oblong on account of it. As early as possible I wish to get rid of these combs and put new ones in their place. I understand that the Miller plan is to have larger sheets of foundation than are regularly supplied for Hoffman frames—large enough to come to the outside of the bottom of the frame, and using a bottom-bar made of two parts, allowing the foundation to go between the two halves of the bottom-bar. With this I understand that Dr. Miller uses splints. With this arrangement does honey-comb usually stretch as it otherwise does? How would it do to have comb arranged as above, but wired instead of using the splints?

This year I tried this arrangement: Instead of securing the full sheet at the top, as is supposed to be done, I dropped the full sheet to the bottom-bar, wired it as usual, cut a narrow strip, and secured it at the top in the usual manner with wedge. The results so far are all that could be desired. I think there must be some objection to this, however, or it would probably be in general use. I should like it if you would point out the objection to this method.

In the frames with which I experimented I used the sheets of foundation regularly supplied for the Hoffman frame. Instead of securing the sheet at

the top, as usual, I dropped it to the bottom of the frame, imbedded the wires as usual, and also used two or three splints. In top of the frame I placed a narrow strip of foundation to fill out the frame. There was no buckling whatever, somewhat to my surprise. It is just possible that the sheet expanded upward.

Rocky Mount, Va., July 27.

S. PRESTON.

[Dr. Miller will please answer this in a Straw.—Ed.]

Black Bees and Moth-worms; a Hen 11 Years Old.

On p. 565, Sept. 1, I noted a communication from J. D. Thomas, of West Virginia, entitled "Moths do not Molest Strong Black Colonies," which I am not going to contradict, as I am not informed to the contrary. What I wish to know is this: If J. D. T.'s bees are what he claims them to be, will he please rear queens from this superior stock, so that we less fortunate bee-keepers may secure a start with bees that are superior to those which we now have? I have never had the pleasure of seeing the blacks surpass the Italians in superiority.

If J. D. T. will rear his queens and advertise them in GLEANINGS, and if they will do for me what he claims they do for him, he may count me as a customer as long as I handle bees. If he does not wish to rear queens, will he send one of his breeders to a reliable queen-breeder so that he may put them on the market?

I wish to tell A. I. Root that we have a hen that was hatched May 5, 1899, having passed her eleventh birthday. She laid a few eggs during the summer of 1909, or after she was ten years old.

Montpellier, O., Sept. 12.

G. W. JOICE.

Some Strains of Bees Immune to Foul Brood.

I have had both American and European foul brood in my apiaries for the last four years, and I find that shaking is an expensive proposition. Then it all depends on the strain of bees whether the shaking plan is a success. Some strains of Italians and the black bees that I have had can not be cleaned by the shaking process.

Two years ago I bought 25 Italian queens, and I find that they are nearly immune to disease; in fact, I put some of the queens in slightly diseased hives and have never found over three or four cells of disease at a time in those hives. Not all of the queens were as good, for some colonies showed the symptoms badly; but when I shook them they stayed clean.

I shook several colonies at my home yard on clean combs this spring, as Mr. Stewart described in his articles, pages 415 and 445. I did this just for an experiment, before I knew any thing about Mr. Stewart's experience. I put the brood above, over a queen-excluder, and the colonies are all clean now. I have good Italians of a strain that resists disease. Trumansburg, N. Y.

E. L. LANE.

[See Editorial in this issue.—Ed.]

A Good Showing for Montana.

I have been in the bee business some six or seven years; and after my experience and what I have read I have come to the conclusion that different climates require different methods of handling. I have never yet read of average yields that have quite come up to what I have got here in Montana. My crop has never fallen below 100 lbs. average since I have handled bees. This year I have taken over 8000 lbs., extracted, from 29 colonies.

There are many things in bee-keeping that I know very little about; but I do know that when I go after it myself I get the yield; and I have learned that it will not do to trust it all to hired help, no matter how much they claim to know about the business.

Laurel, Mont., Sept. 5.

A. G. RICH.

Eggs that Will Not Hatch.

Last spring I had a queen that was a drone-layer. Her eggs hatched nothing but drones; so when I got my first swarm, May 2, I killed the queen and put in her colony a ripe queen-cell. In a few days after, they had a nice queen that was soon laying. Now, not one of her eggs has hatched. They seem to be of good size, and are deposited evenly over the combs. I have given them young bees two different times to keep them going. The bees were in a starving condition by the middle of June. Clo-

very commenced to yield about the 18th or 20th of June; but by the time the bees were in a good condition the weather changed and the honey quit coming in. I have been looking in the hives, but I do not find any sealed honey in any of them; but they seem to be getting enough to be rearing some brood. I have the A B C of Bee Culture, but fail to find any thing like the case I have mentioned. If you can explain it to me I shall be much obliged.

Cheshire, O., Aug. 8.

W. S. PRICE.

[We occasionally hear of a queen that will lay eggs regularly that will not hatch. Cases of this kind will be found in almost every large queen-rearing yard in a season. The queen is structurally defective, and should be destroyed and another one put in her place.—Ed.]

When to Take Off Comb Honey, and How Much to Leave for Winter.

About three years ago I got a hive of bees which I have increased to three. I am keeping bees to get a little honey for the house, and not have to buy it. I am not in the business for profit except as I have said. I do not want to keep more than four stands. What I want to know is when to take off the honey, if there is any, and how much should I leave for winter? One hive has two supers filled with sections, and the other two have a super each. Last year was extremely dry, and I did not get one pound. The sections seemed to be filled with comb but no honey.

Memphis, Tenn., Sept. 6.

F. W. WRIGHT.

[Comb honey, as a general rule, is taken off as soon as it is capped, or at least as soon as the honey season is over. To leave it on longer would result in the discoloration of the fine pearly-white cappings. It is the general practice among beekeepers to take off all honey stored in supers. That which is in the brood-nest is usually left. It is much more profitable to take away comb honey or even extracted honey from the supers, and then, if necessary, in the fall to feed up sugar syrup, at less than half the price of the extracted and one-fourth of the price of comb.]

As to the amount, a colony outdoors in your locality ought to have at least 25 lbs. This would mean that there should be between six and seven frames fairly well filled with honey except a little space in the center combs for a winter nest. In a climate like yours a colony will require more stores than in the States north of you. If bees are to be wintered in the cellar, the cellar being dry and having a uniform temperature of about 45°, 10 lbs. might be ample, although we usually figure on about 15. For outdoor-wintered colonies in double-walled hives, near the Great Lakes, we figure that not less than 20 lbs. will be required.—Ed.]

Uniting Weak Colonies in the Fall.

Two half-pounds of bees without combs I bought have increased to four hives, but one is very weak. If I put the weak hive on top of the stronger, which has my best queen in it, and put a zinc excluder between, will the better queen in the bottom hive be killed? and would the weak colony on top become stronger for fall before being put into the cellar? I can get but very few combs. I can not get them to work out the foundation. I think I should be very successful with bees if I could only get combs. I have fed every day all summer, whether honey was coming in or not. They have not enough to winter on; and without combs I can not feed the syrup, and the hard candy runs down among the bees and kills them, says GLEANINGS.

Reedsburg, Wis., Sept. 10. MRS. W. HAYDEN.

[It is rather unfortunate to have any weak colonies at this time of the year. About all you can do now is to unite them, and in uniting you will have to sacrifice one or more of the queens. It is possible that you may have to unite all four nuclei in order to make one strong colony. In that case you would use only one queen. Possibly uniting two of the weak ones would be sufficient. You would then have to sacrifice but one queen. It is not practicable to winter two queens together in two separate bunches of bees. Although an expert may be able to do it, you would be likely to lose one of the queens in any event.]

We do not see any reason why you had difficulty in getting combs. If you practice stimulative feed-

ing—that is, giving half a pint of syrup daily—the queens ought to start laying, and the bees ought to build comb; but it is getting to be so late in the season that it would be impracticable to do much at it now. We should judge that you have not been feeding enough. For particulars regarding uniting we would refer you to the subject of Uniting, in the A B C and X Y Z of Bee Culture, or any other standard text-book.—Ed.]

Running Two Queens in a Hive.

I have two ten-frame L. hives that I am thinking of putting one on top of the other, with a wood-and-wire excluding honey-board between, and a shallow extracting-super on top of both of the strong colonies. Each hive will have a queen. Would two hives so put together store any more honey in the super than they would on separate stands with an extracting-super on each one? I have never tried this plan of putting hives together more than a few days at a time; and from all I could see it seemed the bees were inclined to store a larger per cent of honey in the top brood-chamber. Am I right about it? I notice some complain that one or the other of the queens usually gets killed; but I have never yet lost a queen by so doing.

When I receive a ten-frame Jumbo hive which I have ordered, I intend to have a tinner make me a piece of screen wire the length and depth of the inside of the hive, this wire to be fastened in a thin tin frame so it will not take up more than 1/8 inch of space, and slip it down between the center frames. It extends above the top of the frames merely to touch the corner so the queens can not possibly get at each other. My idea is to run two queens in this hive. Do you believe this will work all right? What do you think of such a scheme as this? The thought struck me that two good prolific queens in such a brood-chamber as the Jumbo ought to throw a very strong force of field bees in a super when put out.

Eldorado, Okla., Aug. 25.

W. R. WARD.

[You will find this matter of keeping two queens in a hive to check swarming, and at the same time increase the honey crop, very thoroughly discussed in this journal, running through the year 1906. We would refer you particularly to the articles by Mr. A. K. Ferris, beginning April 1 of that year.]

For your present information we may say it is not practicable to have two queens in a colony, even when separated by queen-excluders, except during a honey-flow. After that, and especially in the fall, one of the queens, as a general thing, will be missing. To work two queens in a hive requires a great deal of skill and experience; and even those who know the most about it have apparently given it up, and hence we hear very little about it now.

Answering your questions specifically, we think either plan will work when honey is coming in freely; but you will probably find that only one queen will be in the hive along toward fall.—Ed.]

Not Another Species, but Ordinary Robbers.

Inclosed is a species of robber bee that I find in my apiary. Are they caused by laying workers, or are they a wild bee? Some of my neighbors are complaining of these bees robbing their apiaries.

Percy, Ill., Sept. 7.

W. C. WILLIAMS.

[An examination of the dead specimens you sent us does not disclose any thing but the ordinary honey-bees. If there has been robbing in the vicinity they are simply ordinary robbers, and should be treated as such. They are not another species, as you seem to infer. They may look like different bees from yours, but a robber bee very often has all the fuzz or hair on its body worn off, simply for the reason that in crowding into entrances, and struggling with other bees, it wears off this fuzz. Moreover, robbers are generally old bees; and when the fuzz is worn off they look to a beginner like a different bee.—Ed.]

Where did the Dark Candied Honey Come from?

About the 15th of July, when I was taking off some section honey I found that all the honey, except that left from clover, was granulated, resembling brown sugar. I took from one colony 27 lbs. of this sugar-like honey, and the five other sections were not capped over. A little in the cells was not solid.

I have never seen any thing like this before, and I believe the bees got it from cantaloup-blossoms,

as we raise a great many here. Some say this honey is better than that from clover. At any rate, I am sure it is not honey-dew. The cells that were not half full were just like those that were capped. What do you think is the cause, or where did the bees get it?

Ridgeway, N. C.

R. V. PASCHALL.

[Perhaps some of our readers who know the character of cantaloup honey can throw some light on this.—Ed.]

Bees Clustered Out in Spite of Plenty of Room, Ventilation, and Shade.

Very often I read something to the effect that, in order to keep bees in the hive, we must provide plenty of room. My brood-chambers are all full of comb in which there is no honey, and the combs have been in this condition ever since early spring. The supers are empty, and yet my bees hang out all day and late at night. I have a 1½-in. entrance all around my hives, and shade over every colony. The colonies, however, are very strong, as I have not allowed any swarms because of the bad spring weather.

The bees started in this spring with plenty of honey, and very strong. I had 23 colonies, but now have only 9. It seems as though the bees did not work, for they simply stayed in the hives, ate up the honey, and then all but nine colonies died. The remaining nine have been working finely, but for themselves only, there being but a scant amount of honey in the hives now.

The bees are working all the time, as they bring in dark-brown pollen on their legs; still, there are a great many bees idle around the hives. It seems as though there were but few bees working.

We have plenty of white clover around here, and other flowers. I have sowed buckwheat for a late crop in order to give the bees enough honey for winter use. What is wrong?

Osawatomie, Kan.

W. E. STROUP.

Would Foul-broody Hive-bodies be Safe to Use after an Interval of Six Years? Variation in Color of Bees.

May hives in which colonies have died of foul brood be used again after having been out in the open air for five or six years?

I have been buying queens this summer, and the bees all seem to look a little different from each breeder, either a little lighter or darker. I always send for golden Italians; but I find that the drones are black, and the workers one, two, and three banded. What is the exact color of the different strains of Italians?

I have 63 colonies, most of which are hybrids, and I wish to requeen with the kind of Italians that suit me best. I like the yellowest the best now.

Long Pond, Pa.

MAHLON MOYER.

[There has been some discussion as to whether it pays to disinfect hives at all. Some inspectors claim to have no trouble where they disregard the hives, while others find that the disease returns. We have taken this position: That it means so little expense to scorch out the inside of the hives with a gasoline torch or with a heap of burning straw, that it is penny wise and pound foolish to neglect doing it. As to whether the hives would be safe after having stood out in the open for several years we can not say. If the covers have been removed during that time, so that the sun's rays had access to the inside, it might be that every thing would be safe; but it would take so little time to make sure that we would advise you to be on the safe side, and scorch the wood in the manner above stated.

Unfortunately, the bee-keeping world lacks a true standard of color to distinguish types of bees. By the term "golden" some bee-keepers mean extra yellow bees having the three characteristic bands; but most breeders mean five-banded bees when they refer to golden. There is an unfortunate confusion of terms, including golden-all-over, yellow-to-tip, five-banded, extra yellow, etc.

You can not tell very much concerning the purity of a queen by the color of the drones, for the color of drones varies considerably, even from a queen that is known to be pure. A great variation, however, in the color of the workers—that is, a variation of from one band to three bands—would in most cases indicate that the queen was not

purely bred or not purely mated. Of course, in any hive there are likely to be workers from some other hive that get in. For instance, if you have a queen of known purity in a yard where there are other colonies without pure queens you will be likely to find a few dark workers in this one hive containing the pure queen, for they get their entrances mixed up to some extent.

In the end you will probably find that the extra-yellow bees will not suit you as well as the darker Italians, for the four and five banded bees, being bred especially for color, are not as hardy, oftentimes, nor as gentle.—Ed.]

That "Weeping Honey."

Some time last year we had some correspondence respecting "weeping honey." I am sending you by express six sections that were taken out of different hives yesterday, as sent away from here. The "weeping honey" only shows by the existence of the convex raised surfaces of the cells. There is none yet regularly weeping. We took out some 1000 sections yesterday, and had to discard some 50 more for this cause—not nearly as many as last year, when in some instances whole supers had nothing but "weeping honey." The month of July was very wet and hot. My hives on scales increased 55 lbs. in the last 16 days of June, and 4 lbs. only in July. Half of the sweet-clover crop was lost during the 12 days in August. The increase was 12 lbs. I have noticed, as below, the weeping honey shown on the six sections when leaving here.

Honey is mostly from sweet clover, and bees worked considerably on alfalfa for the first time that I have observed them for several years.

Allenville, Ala., Aug. 13.

H. F. HART.

[The honey came in such bad condition that we were unable to see just exactly how the samples looked before they were shipped; but from the general statement made in your letter, and from the tasting of the honey itself, we are of the opinion that the bees gather something that causes a slight ferment in the honey, for the honey itself seemed to be slightly acid. This ferment generates, probably, a little gas that causes the cappings to bulge, or causes the honey to become thin—so thin, indeed, that it will force itself through the cappings that are slightly porous.

You speak of wet hot weather. It is possible that it was so wet that all the honey could not ripen fast enough, and as a result some of it soured a little. So far from being an old honey, this is plainly a product just from the hive, and is only one of many other cases of a like nature where the honey seems to take on a sort of acid condition. The honey is not bad eating, but we would suppose it would not keep long, owing to the ferment.—Ed.]

Alexander's Apiary of 730 Colonies Operated by Frank Alexander.

I have just returned from a trip, and called on Mr. Frank Alexander at Delanson. He is still running that big yard of 750 colonies. I had wondered what had become of it since his father died, and I presume many others have too. It is there the same as ever; but the very dry weather this year has cut the crop short. His brother, who runs a grocery there, said he thought he would have about twelve tons.

Rathbone, N. Y., Sept. 8.

LEROY LLOYD.

Two Queen-cells Contain the Only Eggs in a Hive.

I had a colony of bees without queen, brood, or eggs. I put in a queen-cell, and in a day or two I looked to see if it was all right, and found two other cells just started with an egg in each. They were the only eggs in the hive.

Union City, Mich., Aug. 23.

J. L. SWAN.

Dr. Miller's Opponent.

I have been much interested in the discussion between Mr. Metcalfe and Dr. Miller. I think the doctor has met a calf that is a hard hitter; and if he succeeds in taming him he will have to furnish some pretty good meal.

Lowell, Mich., Aug. 22.

C. H. WIGGINS.

Our Homes

By A. I. Root

Come with us, let us lay wait for blood, let us lurk privily for the innocent without cause; let us swallow them up alive as the grave; and whole, as those that go down into the pit; we shall find all precious substance, we shall fill our houses with spoil.—Prov. 1: 11, 12, 13.

Almost ever since this department was started I have had more or less to say in regard to market gardening. I have had hundreds of letters from those who have been led to go into rural pursuits from the teachings of GLEANINGS; and it rejoices my heart to know that I have been able to lend a helping hand, as the years have gone by, to the honest hard-working people. In visiting their homes in my travels I have heard many stories of how they worked early and late to get a start. The successful gardener, especially near the large cities, is not only obliged to get up early in the morning, oftentimes before daylight, to get his stuff on the market at the proper time, but he is often obliged to work late at night; and where success has crowned his efforts, it almost invariably happens that the good wife has borne a large part and an important part of the burden. I fear some of these poor women have been overworked, and have gone down to early graves in their ambition to help the husband make a success of the work he loved. Let us now get down to the matters of to-day.

On the morning of Saturday, Aug. 27, a market-gardener near the city of Cleveland took in a load of produce, with his wife and little girl to help dispose of it. In order to clean up their product they stayed until it was well along in the night before they reached their home. When near Kamm's Corners, on the western outskirts of Cleveland, and not far from their own home, a couple of highwaymen attempted to hold the team just ahead of them. These bandits naturally conjectured that these gardeners going home from the market in Cleveland would have considerable money in their pockets. One of the highwaymen grabbed the horses by the bits, and the other pointed his gun at the driver and demanded his money. This shrewd, hard-working farmer, however, did not propose to give up his honest gains without a struggle. He gave his horses a cut, and they pulled away from the hands that held them; but the man with the gun shot at the driver in his attempt to stop him. The ball struck the wagon, but did no further harm. These two drunken boys, however (and they were only boys), decided to try to hold up the next team. This team was the one I have described, with the man and his wife and little girl. When they saw what had happened to the team just ahead of them he turned his horses quickly to drive back in the other direction. The boys, seeing this,

fired several shots at the team, but did not succeed in stopping it. They did succeed, however, in killing Mrs. Rayner, the driver's wife, one of the bullets piercing her heart. If I remember correctly the little girl was asleep in her lap, and this poor hard-working mother, who had a little family at home, and on whom so much depended for their care and well-being, was thrust out of the world because those two wretches in human form wanted the little money Mr. Rayner and his wife had worked and toiled for early and late. The girl was awakened by a bullet tearing through her foot. She screamed with pain, but the mother heard nothing, as she herself was dead.

As a natural consequence a great stir was made. The papers told us that the whole neighborhood by the hundreds, and I do not know but thousands, turned out to hunt up the perpetrators of that dastardly act. By the way, the highway hold-up business seems to be on the increase, not only in Cleveland but in the suburbs around that great city; and not only after night are men held up, but several times lately in broad daylight in the crowded streets of Cleveland. And even the boys have caught on to the trick of getting money without working for it. They borrow an old revolver, it does not matter whether it will shoot or not, then point it at some one and demand his money. What they do with the money when they succeed in getting it will come in a little further on in our story.

Notwithstanding the crowds that came out and scoured the neighborhood, it was over two weeks before one of the murderers was caught. See the following, which I clip from the *Cleveland Plain Dealer*:

START AS HIGHWAYMEN.

YOUNG MEN, ACCUSED OF SHOOTING DOWN FARMER'S WIFE, BUY REVOLVER, DRINK HEAVILY, AND THEN BEGIN CAREER OF CRIME, ASSERTS PRISONER—BURN BARN, STEAL HORSE, AND THEN SLAY AFTER MANY ATTEMPTS AT HIGHWAY ROBBERY, DECLARES YOUTH NOW IN CUSTODY.

William Van Gelder, 19-year-old youth, confessed murderer of Mrs. Walter Rayner, Rockport, was arrested early yesterday morning by Sheriff Hirsztus and Detectives Madison and Rabshaw.

The capture, after weeks of work on the part of the officials in running down numerous clues, was made at the home of Samuel Duck, Richmond, O., a little town three miles north of Painesville.

You will see from the above that it must have cost quite a little sum of money to run down that boy. Here is another clipping that describes him:

Van Gelder, strong and manly, yet worn with the burden of his crime, told his story freely, willingly, relieved at his capture, which he had feared and yet longed for. It is the old story of a desire to emulate the bandit type of idleness, a couple of guns, and a few drinks. For two nights the career of attempted robbery and wanton shooting went on, terminating with the killing of Mrs. Rayner.

Notice what is said in the above about a couple of guns and a few drinks of whisky.

* * * the excitement over, the courage of the whisky gone, cold, trembling, and tired, he crawled into bed that night, ignorant of his crime.

The above gives us a clue to the whole business. The courage that this boy had to go into this terrible business came from *whisky*. Where did the boy of only 19 years get that whisky, not only in the day time but after dark and after *midnight*, in various places out in the country and in and around Cleveland?

Let us digress a little right here. Our own county (Medina) is dry, and it lies just south of Cuyahoga, where this murder was committed. If I am correctly informed, about 90 per cent of the 88 counties in our State are dry; but notwithstanding our dry counties, our Medina officers are kept busy, and there is somebody in jail here a greater part of the time, just because there is a wide-open saloon (wide open day and night) a little to the north of us on our electric railway. It is located just out of the incorporation of the town of Berea—a pleasant village celebrated the country over as the seat of two great Methodist colleges, Baldwin University and German Wallace College. The village itself is strictly dry, but this one saloon just outside the corporation keeps Medina and Berea both busy in taking care of the criminals that radiate constantly from that saloon. (It makes me think of the shooting stars that are constantly emanating from the little speck of radium I have in my possession.) This young Van Gelder, when he was deprived of the stimulus of whisky, had a *conscience* after all. He confessed fully, and was glad, so it seems, to *make* a confession. As there are some morals scattered all through this confession I have decided to copy it entire.

"Friday, Aug. 26, the first night we were out. Pender and I came into town and bought two guns at a pawnshop on Ontario St.," said Van Gelder. "For one we paid \$2.00 and for another Pender put up his watch and another \$1.00. From there we went out to Rockport, and in front of the schoolhouse—it was dark by that time—we met a farmer and fired two shots at him. He was going toward town and whipped up his horses and got away. At Columbia station, shortly after, we met another and shot at him. One of the shots went through his stiff hat, but he drove on and escaped."

"A little later we went up to Harrington Road and met a man that I now think was Ellis Harrington. We saw him coming near his home and then decided not to hold him up, but waited until he was unhitching his horses, and then Pender asked him if we could sleep in his barn. He told us that we could not, and ordered us off. We went up the road a way, and Pender said that we would get him."

"After he had unhitched we went back to his barn, hitched a horse into a rig and tied the other horse in a shed. Then I drove to the road and pretty soon Pender came out and without a word we started to drive away. After a while Pender looked back and said:

"Do you see that light?"

I looked back and said that I did.

"That fellow will have to work. I set his barn afire," said Pender, and we both laughed. Then we drove to the corner of Highland Av. and Madison Av., where we left the horse and buggy. We then went home and it was about 4 A. M.

"Saturday night, the night of the killing of Mrs. Rayner, Pender came to my house. I got shaved and we started out once more for Rockport."

"I know a fellow who has lots of money, and it's easy to get," Pender told me. He meant a Mr. Collbrunn. On the way out, we stopped at Kundtz's saloon and got a drink. Then we went west to the Rockport club, and tried to steal a rig out of a stable shed, but we were frightened away by some one who heard us. Then we went back to the car barns

and got a drink at Wyatt's saloon on the way, and then turned back east toward the tracks.

"We saw a fellow coming, and started to hold him up, but we concluded that he had a gun, and so we didn't try it, but walked on back toward Darmstatter's saloon, where we sat for a while on the watering-trough and then we walked east. It was then that we heard the rumble of the big covered market wagons returning from Cleveland. We waited at the side of the road until the first one, Dunford's, came along."

"When he got opposite us, Pender grabbed the horse by the head and I pointed my gun at the driver and told him to give up his money. But he whipped up his horse, and broke away from Pender. I fired, and the shot tore through the side of the wagon."

"About 100 feet back came a second wagon, Rayner's. He had heard the shooting and was trying to turn his horse back east. But we both ran out into the road, and started shooting at him. We didn't tell him to stop, or give up his money—we just started shooting. I don't know why, only we had been drinking all night, and I guess we didn't know what we were doing."

"We fired two or three shots and then started to run over through the race-track. As we stumbled along Pender asked me if I heard that groan. I told him that I did not. We did not know then that any one had been killed."

"We ran through the race track, over to Riverside Av., and there Pender went into a barn belonging, I think, to a man named Christianson, and hitched up a horse. Then we drove through the fields and over some roads to Lorain Av."

"As we came over Lorain Av. we met a man whom I now think was Charles Harrington. We stopped and talked with him. Pender was nudging me all the while to hold him up, but I was cold and chilled and sick with the whisky and I didn't. We both started on, and before we had gone more than a few feet Pender wanted to go back and get him. 'He may have half a dollar,' he told me."

"We did start back, but Harrington was out of sight."

Harrington saw them coming toward him and hid in the bushes by the roadside.

"We then drove back to Kundtz's saloon and had a drink. It was then 2:15. I stayed in the buggy and Pender brought me my drink. There was another rig standing there and we talked of waiting until its owner came out, and holding him up, but we decided not to. Then we took the rig down to Minut's barn, where it was found."

In reading the above, one asks how it is possible for those two boys, in their *right minds*, to go ahead in that way and hope to escape. My answer is, they were *not* in their right minds. They were made crazy and kept crazy by getting drunk in saloons that are scattered all along the line of the electric railway between Cleveland and Kamm's Corners, near where the murder occurred. When they asked Mr. Harrington if they might sleep in his barn, and were refused, out of revenge Pender set the barn on fire. This unreasonable and *posterous* anger was instigated by *whisky*. It is a fair sample of a drunken man's way of reasoning. When they saw what was done they both laughed—another example of a drunken man's—not "brute sense," but lack of *all* sense.

Please note the names of the different saloon-keepers in the confession, and where these men got whisky at any time, day or night, when they happened to call for it. These hot-beds of crime are mostly started and kept going by some foreigner who is too ignorant to understand the mischief he is doing our country and our nation, even if somebody should try to explain it to him. Please consider that this man Rayner was a law-abiding citizen. He had done no-



FILLING UP THE RANKS AS THE VETERANS DROP OUT.

—Courtesy of "The Friend."

thing to provoke those drunken men. The boy says, by way of apology, that they had been drinking all night, and did not *know* what they were doing. Please note the all-night part of it. They not only held up honest and innocent people, but helped themselves to rigs wherever they happened to be. Imagine a busy market-gardener going for his horse and buggy and finding that some drunken man has appropriated it! Now, then, what shall be done with these highway robbers and murderers? If this thing is allowed to keep on, people will be afraid to go out on the streets after nightfall.

Just one more clipping from the *Plain Dealer*:

The Ohio law provides that whoever kills while attempting robbery shall be guilty of first-degree murder. It is thought that, in view of Van Gelder's youth, it may be hard to send him to the chair.

From the above it would seem as though the boy and the man with him are candidates for the electric chair; and it may be true that the electric chair will help to save life and give a feeling of security in the future to busy people who really must be not only up early in the morning but late at night; but how about those *saloons* named in the above clipping? Shall they be allowed to go on with this terrible business day and night? Are *they* in any way responsible for the increasing number of hold-ups? Suppose the crowd that collected could have caught hold of the murderers at the time Mrs. Rayner was killed. God forbid that the *lynching* business should be on the increase as well as the *highway-murder* business. Now suppose that the crowd had decided, or some able speaker

had been able to explain to them, that the *saloons* were as much responsible, if not more so, than that boy only 19 years old; and suppose, after this crowd of people (it might have been a hundred, or may be several hundred) had gone to that nearby saloon-keeper and notified him that *he* was also responsible for that woman's death—suppose this whole crowd, laborers and land-owners, had demanded that he quit his business then and there, would he not have done it? I think he would. More than twenty years ago, Rev. C. J. Ryder said in one of his sermons here that if the business men who sat before him would *demand* that the saloon across the alley from the church should quit business it would wind it up. I think I gave voice to the loudest "amen" I ever uttered in any church, when our pastor made that statement; and as the saloons quit business a very short time afterward, somebody suggested that my amen helped to break up and banish the saloons from our town, from that time to this. How does it come, friends, that in this "home of the free and the land of the brave" so many people sit still and let this terrible traffic go on? We are making great progress in combating "preventable diseases;" we are looking after the babies as we never did before; we are even making deep studies of the matter of looking after the health and happiness (I guess that is the right word) of our pigs and chickens; but may God forgive us (and if we go right at it I think he *will* forgive us) for letting these hot-beds of crime continue to grow and flourish right next door to honest and hard-working people.

I have copied a picture from a periodical

called *The Friend*. Just look at the procession, and all marching down to a drunkard's grave. I hardly need tell how this has been going on for ages past, and the responsibility rests on us, *on you and me*, for letting it keep on. As the men in the ranks drop out, somebody must fill their place; and the saloon-keeper makes it *his* business to fill up vacancies. If grown-up men deliberately and of their own accord step into the ranks, it would not be so hard; but just think of taking some innocent boy—a boy for whom his mother is, perhaps, working and praying even now—taking this bright, innocent, unsuspecting youth and *thrusting* him in among that crowd just for a few nickels. May God help us. We are making some counties dry, and the thing is narrowed down until now the counties containing great cities are asking, "Shall liquor rule?" or, as I said before in our previous issue, "Shall *rebels* rule?"

I wish to quote here a few lines from William Jennings Bryan:

A FEW QUESTIONS.

Question.—The money invested in breweries, distilleries, and saloons in Nebraska is small compared with the money invested in farming, manufacturing, and merchandising. Why is money invested in the liquor business so much more potent in politics than money invested in other forms of property?

Answer.—Because money invested in breweries, distilleries, and saloons is used as a club to beat any one who opposes the demands of the liquor interests, while the owners of other forms of property allow themselves to be terrorized.

Question.—Why do those connected with the liquor-traffic exert more influence in politics than educators?

Answer.—Because the nation spends four times as much for drink as it does on education.

May God be praised that Mr. Bryan has finally broken away from the political gang that has heretofore kept him from speaking out his honest sentiments; and may all good men and women rally around him and hold up his hands.

Yet one more clipping, in closing, from the *Plain Dealer*:

WOULD BAR SALOON BANKS

COLLINWOOD RESIDENTS INDIGNANT OVER PRACTICE OF CASHING PAY CHECKS IN RUM-SHOPS.

Collinwood citizens are indignant at the wholesale practice of cashing checks that is going on in the saloons as soon as Lake Shore railroad employees are paid off. It is said that the saloon-keepers are reaping a harvest by the business.

"This business ought to be stopped at once," said Rev. M. L. Buckley, pastor of the Church of Christ. "I understand that soon after pay day certain saloons cash checks to the amount of \$40,000; a good amount of this is, undoubtedly, returned to the bar-keepers for beer and whisky. Of late the saloon men have been running things with altogether too high a hand."

The wave of indignation against the distributors of rum was precipitated by the robbery Wednesday in Zimmerman's saloon, Collinwood, when \$1800 was stolen from the place. The loot was money which was on hand to cash the railroad men's pay checks.

Please notice this \$1800 was money to pay railroad men, who certainly earn their money if anybody does. The robbing was *in a saloon*, of course. Does not our text describe those engaged in the traffic?

THE WRIGHT BROTHERS' UP-TO-DATE FLYING-MACHINE; SEE PAGE 628.

*Up above the world so high,
Like a diamond in the sky.*

In writing up my visit to the Wright brothers, p. 602, last issue, I said I hoped to give our readers a good picture of it soon; and through the kindness of Miss Catherine Wright, sister of Orville and Wilbur Wright, I received a very good picture of the machine I tried to describe in our last issue; and I tell you it is an imposing spectacle, even when it stands out on the grassy field, *ready to fly*. In steering an automobile the operator has only to swing it to the left or right; but after the flying-machine leaves the earth, it has to be steered in a like manner up and down. Just in front of the machine you see a pair of cloth planes, something like the large machine itself, except that they can be turned up or down with a lever. At the rear of the machine there are two similar planes of cloth, but they stand up and down vertically, as you see; and these can be revolved so as to make the machine turn either to the right or to the left. While the students were making their experiments during my visit they swung around in a very large circle, as there was quite a brisk wind. But Orville explained to me that, when there was a little wind, or almost a dead calm, an expert aviator could tip the machine up almost edgewise, and swing around in a circle so small that it was almost like turning on one's heel. The skill to perform this feat, however, comes only with long practice. I noticed that, at the recent meet in Boston, some of the pupils were swinging their machines around on so short a curve that Wilbur Wright interfered, and forbade their taking any more such risks. Now, with this preface I wish to copy from a new periodical for owners of automobiles, called *The Lever*. You can get a sample copy by addressing The Lever Publishing Co., 141 West Ohio St., Chicago, Ill.* The following extract is from a statement made by Arthur L. Welsh, entitled "How it Feels to Fly."

Welsh had read many books on aviation, yet he had never touched an aeroplane previous to last March. He wished to buy one, so he saw the Wright brothers. It was his intention to tour the country at county fairs with his aeroplane, but a bigger opening came his way. He found that Wright brothers were delivering no machines until 1911, but that there was a chance to get on their staff as an aviator. Welsh applied and was accepted. He is 29 years old, next to the youngest aviator in this country, the youngest being a man of 21 years. His home is in Washington, and he has made some of the highest flights on record.

"It took me," said Welsh, "just about four hours

* Perhaps I might mention the fact that one of my grandsons, Howard Calvert, a boy of 19, when he first saw a copy of *The Lever* spoken of above, hurried off a dollar for the journal for one year. Then he desired his grandfather to make application to the Wright brothers for a place among their pupils to learn to run a flying-machine as well as an automobile. And, by the way, I might add that Howard is already quite an expert with all sorts of automobiles, and motor cycles. Whenever his grandfather has "got stuck," Howard has been pretty sure to get him out of his trouble in a very short time. I am glad to add that the boy has just begun a course at Oberlin College.

and a half of actual flying to learn the trick. This time was spread over a period of six weeks, more or less, for Mr. Wright never takes his students out in a machine unless there is a perfect calm, and for this we often have to wait weeks at a time. I had never flown before. I had no shop training, yet the game attracted me.

"First, Mr. Wright put me in the passenger seat, and we took a trip, merely an exhibition. I was simply a passenger. The second flight he gave me charge of the front control, which regulates the up-and-down movements of the aeroplane. This was the first practical work I had done. It was easy to learn, and after the fourth trip I was given charge of the lateral balance lever, which is in two parts. One part regulates the angle of the planes and the other the rear rudders, which enable the aeroplane to make curves and circles. After a few trips in which my whole attention was devoted to using this lever, I was given charge of both together, and controlled all the movements of the machine.

"At no stage of the game was I frightened. I guess I didn't expect to be—at least, the moment we rose in the air on our first trip I experienced a strange feeling of security that can be understood only by actually experiencing it. The rush of the machine, the whistling of the air about me, and the terrific speed wedged me back into my seat, and I lost all ambition to hold tight to something. Falling is probably what most people fear. Height seemed to cut no figure in my feelings, for I was firm in my seat, and soon all consciousness of the idea that I might be thrown out and go tumbling to the earth below disappeared.

"One peculiar thing about flying is the after-effects of the roaring of the motor. With open ports the shots are fast and furious, and the roar is deafening. Sometimes, just after a flight, it takes me several minutes to shake off the feeling of deafness, of ear pressure, caused by the roaring motors. But I've come to love that roar. It's like a human heart-beat. You miss it when it's gone.

"Up in the air I have practically no idea of how high I am. Of course I can guess, but the landscape is so varying and so deceiving that it is almost impossible to tell anywhere accurately. The time I care most about is the critical moment when the machine speeds up toward a flying clip and the rise is about to begin. It keeps me busy for a moment or two with the levers, then I shoot up, up, up, until I am clear of the earth. The tension caused by the anxieties of the get-away breaks, and I feel like cutting figure eights and doing other stunts. It's the get-away—that twenty feet just above the ground that's full of worries. I tell you, it's a relief to feel that you've made it all right.

"Speed? I never can tell—except by the hum of that cracking motor. When I am well up in the sky it often seems as if I were hardly moving. I can feel the rush of the wind as it whips about my face, and the suction of the huge propellers as they race around behind me. As for the feeling—every one will have a different sensation, I suppose. For myself, I never want to come down. When I start at early sunset I like to fly until dark. Of course, it is business with me; but then, there is nothing that can touch the pleasure of it. And this is not merely because there is an element of risk connected with it. The feeling is intangible. I'm not a writing man, and I don't know how to describe it—but it's great!

"There is one thing that I never forget, however. That is the simplest thing about the machine, and at the same time one of the most important of the parts of the aeroplane. On one of the cross-bars some few feet ahead of me is tacked a tiny wisp of a rag, light enough to let the breeze blow it about. That is my trouble-indicator. When I am making a big circle there is a certain angle at which that rag should straighten out. If it takes another angle than the one it should, I know I am drifting—which way, the rag shows. You may be sure that my eyes keep that bit of soiled cloth well covered at the critical moment.

"The sensation? Try it! You'll never know until you do."

**FLYING-MACHINES IN FRANCE UP-TO-DATE;
1000 SOLD ALREADY, AND ANOTHER 1000
TO BE DELIVERED BEFORE THE END OF
1910.**

We clip the following from the *Journal of Agriculture* for Sept. 22:

Next year French aeroplane manufacturers expect to sell 11,000 machines. More than 1000 aeroplanes have been sold in France since the first of the year, and another 1000 will be turned out and delivered before the end of the year. Three hundred Bleriot monoplanes and 200 Farnam biplanes have been sold this year, these two types being the most popular.

SOUTHWEST FLORIDA; MORE ABOUT THE DISCOURAGING THINGS, ETC.

The letter below comes from an Ohio beekeeper who has been in Manatee Co. for about a year. My impression is that he has not met with the success that he expected, and I do not know but he is a trifle homesick. I think, however, that what he says is mostly true. I can not agree, however, that it is a bad place to earn money. If I am correct, carpenters are getting \$4.00 a day, working eight hours; and some of these carpenters are not first-class, either, as I happen to know. Now, I did not mean to find any fault; but the above may sound a little like it; but I offer it as an illustration. But let us read the letter:

Mr. A. I. Root:—Your description of Florida in your writings, I am afraid, is altogether too flowery, and its disagreeable side is made too tame, which may induce many Northern people to come here who would do better to stay where they are. About the only disagreeable thing you seem to see is the redbugs, and they are pretty bad, sure enough. Mosquitoes are also bad, and have troubled us since you left for Ohio, although just now they are not troubling us much. Since the rainy season seems to be about over they have left.

The worst feature about this section is, to my mind, the slim chances a man has for making any money. What I have seen leads me to believe Florida is a grand place to *spend* money, but an awful poor one to *earn* it. Take the truck-growers about here, for instance. Very few of them got any thing out of their crops last season. Many of them, as you probably know, came out away behind—thousands of dollars in some instances—and year before last was said to be no better. This is making hard times, for money is scarce. Bradentown is as dull as can be, and no building of any account is going on, nor has been in the past year.

The trend of your writings is altogether too rosy. Wouldn't it be better to give the public a little more of the dark side? Don't tell them of the fine hard and oiled roads all about Bradentown, when the fact is there is only one hard road, which is Manatee Ave., leading from Manatee to Forgyville. All others drop you into sand except the woods just a little way out of town.

My business of bee-keeping has taken me over the country on both sides of the river some 15 to 20 miles; and although having traveled over much of this country from Massachusetts to California, Washington and Oregon, etc., I must say that, for downright barrenness, I have not seen any country like this. Yes, tell the good people of Ohio and elsewhere that Florida has a 98 per cent climate; but where one has to pay out more for fertilizer per acre than it would take to buy a good improved farm up there, what's the use of trying their fortunes here? I remember along about 1895 a colony was started at Green Cove Springs, through the influence of the *Farm, Field, and Fireside*, of Chicago. Quite a little settlement was started about three miles from the town. I happened to land there in the winters of 1896 and 1897, and stayed there most of the two winters. Well, it didn't take long for those Northern people to starve out, and I don't think there are more than two or three families left now. All had to go back to make a living.

The land about here is somewhat richer than about Green Cove Springs; but freight and commission charges in most cases eat up all the profits, and leave the grower worse off than when he started in.

I have written of a few drawbacks only. There are many more I could tell about—the land sharks,

barrenness of our markets in summer, the poor fruits, etc., but will forbear at this time.
 Bradentown, Fla., Sept. 16. E. M. GRAVES.

After reading this a suggestion comes to my mind, and it will apply to many people besides friend G. For instance, somebody from the North comes down here, and when he has bought his milk at 10 cts. a quart, eggs at 40 cts. a dozen, strawberries at 30 cts. a quart, etc., he is inclined to think the price is *awful*; but I say to him, "My good friend, if you think the prices are awful, why not turn around and be a *producer* instead of a consumer only?" I tell you, that makes things look different. Now, I know by experience that you can produce eggs and milk and strawberries in Florida, and do well, if you are not afraid of good hard healthy work. Some of my friends have suggested that I would be happy, no matter where you put me. That may be true; but one comforting thing about it is, no matter where I go I find more or less good people who are *just like me* in that respect.

ELECTROPOISE, OXYDONOR, OXYGENATOR, ETC.

Dear Sir:—I saw in GLEANINGS a piece about Oxydonor. I have in my home at present an Oxygenator that is claimed to cure all diseases. I got it to cure rheumatism. The price is \$35.00, and I should like to know if this is the same thing that your paper says is a humbug. If you know any thing about this I should be pleased to know.

Apple Creek, O., Sept. 22.

OTTO SAURER.

The letter above explains itself.

My good friend, the picture on the circular you send us illustrates the old Oxydonor exactly; and it will do you just as much good as a horseshoe nailed over the door to keep off witches. It has exactly as much strength and science about it as a horseshoe. If you think I am pretty severe on these rascals who claim they have invented something, listen to the following:

Dr. Kellogg, of the Battle Creek Sanitarium, helped years ago to expose this scheme of robbing sick people. While I was on a visit to Battle Creek he gave me the following:

A wealthy man in their neighborhood built a very fine residence. In order to have it fully equipped he bought a \$50.00 Electropoise or Oxydonor—I do not remember which name he applied to the machine; but that does not matter; but he paid \$50.00 for the outfit. It was recommended to take the place of the family physician. This \$50.00 machine was something like a large clock. In place of figures on the dial there were the names of various diseases; and you could turn the hand on the dial so as to stand over any one of these maladies. Well, when this rich man was exhibiting his great scientific invention for curing people, Dr. Kellogg asked him what sort of complicated machinery inside performed these wondrous cures. The owner said he had never seen the inside, but felt quite sure that it was some new piece of complicated mechanism. The doctor proposed that they get into it and see. Now, the manufacturers evidently did not mean to facilitate any prying

curiosity; but with the aid of some tools they opened it so they could see inside. What do you suppose they found? Just this: The wire that was attached to the patient's ankle was simply twisted around a nail on the inside of the machine; nothing more. When the owner saw it he called one of his hired men and had the \$50.00 apparatus taken down and thrown out on the woodpile. The thing that these fellows put in a dish of ice-water, with a wire hitched to the ankle, was on the same principle as the above. It is made to work on the credulity and imagination. It does just that and nothing more; and the price is, in the case just now before us, \$35.00.

THE VIOLATION OF LAW AT NEWARK, O.,
 AND WHAT THE GRAND JURY THINKS
 OF IT.

We clip the following from the St. Louis *Star Farmer*:

Former Sheriff William Linke, of Licking County; former Mayor Herbert Atherton, of Newark, and former Chief of Police Robert Zergabiel, are held to blame for the lynching. They could have prevented it, in the opinion of the grand jury, had they lived up to their official duty. The sheriff is said to have cowardly deserted his post, the mayor to have gone to bed at home, and the chief to have gone to a near-by saloon to play cards.

Responsibility is also lodged with the people, for the report says had they elected competent officials the lynching would not have taken place.

Think of it, friends—the chief of the police of a great city playing cards in a near-by saloon when officers of the law were being lynched for trying to do what he should have done. Who is to blame for putting such men in office? Are the officers of the law in *your* town or city in the habit of frequenting saloons? If so, wake up before you have a repetition of the Newark tragedy.

"I DO NOT DRINK."

May the Lord be praised for the following, which we clip from a recent issue of the *Union Signal*:

He who drinks is deliberately disqualifying himself for advancement. Personally, I refuse to take such a risk. I do not drink. WILLIAM H. TAFT,
President of the United States.

If the man who occupies the highest office that this nation can give to any man has the courage to come out before the world and say "I do not drink," what should prevent every youth in our land, who has any ambition to be great and good, from following his example, and saying, both in public and private, "I do not drink"?

I copy the following from the *Southwest Anti-saloon Issue*, of Albuquerque, N. M.; and if President Taft has committed himself as below I shall have to beg his pardon, and at the same time I should be glad to have somebody tell me *when* and *where* he said it.

The ideal state, and that which we should work for, is, unquestionably, prohibition.—W. H. TAFT.

May the Lord be praised for a President who is not afraid to stand up for righteousness and against iniquity.

Gleanings in Bee Culture

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Editorial

ALL about the "Everglades," from a bee-keeper who lives there, in next issue, which will be a "Florida special."

DON'T forget to read the special subscription offer on first page of our advertising section, by which the reader can get one-half pound of yellow-sweet-clover seed free.

SOME MORE EXTENSIVE ENLARGEMENTS.

SOME extensive enlargements have been going on in the way of buildings and equipments at The A. I. Root Company's plant. Any bee-keeper who would like to see how we have grown during the last few years is invited to make us a visit. But be sure to come to the office, tell who you are, and ask for a pass.

MODEL FOUL-BROOD LAW.

WE shall be glad to furnish copies of a model foul-brood law to any who may apply. The one to which we refer was drafted by Dr. E. F. Phillips, of the Bureau of Entomology, Washington, D. C. For most States we believe it will prove to be the most effective that has been proposed or enacted. We have it in Ohio, and it works as well in practice as in theory.

BEEES AS FERTILIZERS OF CRANBERRY BLOSSOMS.

MORE and more the value of bees as fertilizers of blossoms is being understood. We notice in *The Boston Transcript* that Prof. H. J. Franklin, who has charge of the cranberry experiment station at Wareham, Mass., states that the bees have an essential duty to perform in cranberry work, and that the fertility of the cranberry-bogs depends on the presence of the bees. An experiment was tried, consisting of screening a portion of the bog to keep the bees away, with the result that there were few berries in the screened portion, while in the outside there was a fair crop. Further experimenting will be done next year.

HONEY-MARKET CONDITIONS.

PRICES probably have reached their height. We are getting too close to the hol-

idays to warrant buyers laying in a very large stock now. Of course the general scarcity of comb honey may have a tendency to keep prices up, but it will be very risky for those who have honey for sale, especially comb, to hold any longer, expecting a further advance. Extracted can be held over, because it will keep for another year, but comb honey should always be sold as early in the fall as possible.

There does not seem to be very much difficulty in getting good extracted, but good *comb* honey has been rather scarce; and this very scarcity, as we have already stated, may have a tendency to hold prices up.

TWO NEW BEE-BOOKS IN THE PRESS OF GLEANINGS IN BEE CULTURE.

THE copy for a new and revised edition of *Advanced Bee Culture*, by W. Z. Hutchinson, is now in the hands of the publishers of this journal. We hope to have the new edition ready for delivery along about the holidays. The new book will be considerably enlarged, and brought clear up to date. The fact that W. Z. Hutchinson is the author of it is enough to show any practical bee-keeper that it is a work well worth reading. While it is designed primarily for the advanced bee-keeper, as its name indicates, the beginner, if he has in connection some other work, will find it exceedingly valuable. We also have in hand the copy for a book for beginners, by E. D. Townsend. *Advanced Bee Culture* and Townsend's book would go well together. We hope to have the former ready for delivery in about a month.

FEEDING LATE.

LOOK well to your colonies to see if they have sufficient stores to carry them through the winter. Strong colonies especially need an abundance of stores. For *outdoor* wintering we would have not less than 20 lbs., and, better, 25 lbs. of sealed stores to a strong colony in a ten-frame hive. Weaker colonies will, of course, get along with proportionately less. For *indoor* wintering we usually figure on having about from one-half to two-thirds the amount that we give to outdoor bees.

If you find colonies short of stores, the best thing to do is to give them combs of sealed honey. If these are not to be had, feed sugar syrup made out of cane sugar, two parts sugar to one part of water by bulk.

If the weather is cool, feed the syrup moderately hot.

One yard last winter, where we had almost perfect wintering, we fed so late that we had to wear overcoats and mittens to give the syrup to the bees. We do not advise late feeding; but if it has been deferred, through inadvertence or inability to get at the work sooner, feed anyhow. Don't let bees go into winter quarters short of stores.

THE IMPORTANCE OF SHIPPING COMB HONEY IN UP-TO-DATE PACKAGES.

VERY recently we have seen several lots of honey, otherwise first class, that arrived at destination in very bad order because the shipper evidently thought he could not afford to take a bee-paper or a bee-book, or because he does not take the time to read them. No wonder some dealers will refuse to take consignments of comb honey. We saw one shipment of four cases of nice comb honey put into a *common box*. Of course, the honey went through all broken down. If only one or two cases go, they should be properly marked "Comb Honey" or "Fragile, Handle with Care." Labels for that purpose can be had of any of the dealers. When ten to a dozen cases are sent, they should be put in a carrier provided with handles. The bottom of the carrier should have four or five inches of straw before putting in the cases.

We have seen lots of honey recently that brought a low price simply because they were put in poor, home-made, cobbled-up shipping-cases. When will some people learn that, in order to get good prices, they must put their produce up in first-class packages?

BEES MAKING TROUBLE IN CANDY-FACTORIES.

A NUMBER of our subscribers have written us regarding a wholesale destruction of bees by employees of candy-factories in the southern part of Ohio. There are no screens on the windows; and when the bees collect inside a long gas-hose is made use of, with a burner on the end, which is rapidly run over the windows, and the wings of the bees burned off. They then drop to the floor where they are swept up into buckets and carried out and killed. This is an aggravating case, for very likely if the bee-keepers took the matter into court the candy-factories would turn about and make an effort to declare the bees a nuisance. They probably would not succeed in doing this, but they would make the bee-keepers a lot of trouble.

It is a shame that candy-factories should be allowed to operate without screens on the windows, for there is then nothing to prevent the flies from the street coming in, laden with disease germs as they are, and reveling on the exposed sweets. Possibly some of the candy that we eat would not taste as good if we could see how it was made.

We have been advising the bee-keepers who are losing bees in this way to take up the matter with the manufacturers of candy in a friendly way, and see if they can not be induced to put screens on the windows. Perhaps the pure-food law might help them out, but we doubt it somewhat. Unless the factories are so extensive that there are a large number of windows to be screened, it would seem to us that the bee-keepers living near could well afford to bear a part or all of the expense of the screens that would be needed.

TREATING FOUL BROOD LATE IN THE FALL OR IN THE WINTER.

WE are getting quite a number of inquiries, asking how to treat foul brood after brood-rearing has practically ceased and the colonies are preparing to go into their long winter sleep. As a general thing the presence of disease in such colonies can not be detected except by foul-brood scales. In a case of the American type of disease a sort of gluey mass that was once a larva will be found lying in the bottom of the cell, dried down and stuck fast. As a general thing nobody but an expert will be able to recognize these so-called scales. On the other hand a bee-keeper will occasionally find a little brood in his hives that is unmistakably foul.

In either case he wishes to know what to do. At this time of the year we would recommend cutting out the portion of the brood or comb known to be diseased. If a comb contains foul-brood scales, remove it, or any others that show the characteristic scales. In all probability the removal of the affected combs or affected portion of the combs will result in the cure for next spring. It is quite impracticable to shake on foundation at this time of the year. If the colony was very badly diseased, known to be such in early fall, and for some reason treatment was deferred, we would recommend shaking the colony, if a strong one, on foundation; let it stay there for 24 hours, remove the foundation, and then give good combs of sealed stores from a healthy colony.

If European foul brood is known to exist or is suspected we would advise changing the queen, but no other treatment. Of course, when requeening, the very best of Italian stock should be procured. This requeening may be sufficient, and it may not. Either disease would be practically inert during the late fall and winter; but all colonies where the disease is suspected in the fall should be examined repeatedly next spring. If disease develops, treat in the regular way.

SOME TRICKS OF THE TRADE IN UNITING.

Now is the best time of the year to do general uniting for winter. A morning should be selected when it is cool, or cold, when the bees are not flying, say a temperature of 50 or 60 degrees. If the two colonies to be united are contiguous, that is, stand side by side, remove one of the hives

and put the other one half way between the places where the others stood. Then pick out the best frames of the two brood-nests with the bees and put them into the one. As a matter of precaution, don't mix the combs of the two lots, but put one set on one side and one set on the other side of the brood-nest. Close the hive up. If there is no difference, pay no attention to the queens. If one queen is superior to the other, kill the inferior one and allow the other to remain. It is not very difficult to introduce a queen out of the same yard—in fact, any fresh queen that has not had a long journey through the mails. In most cases the queen of one lot of bees will be accepted by the bees of the other set of combs.

But in a case where the two weak colonies are separated, one in one portion of the yard and the other in another, we would advise moving the weaker of the two, which has been made queenless, over to the stronger, and, while doing so, blow a little smoke into the entrance and jar the bees, giving them a general jouncing before uniting the two sets of combs into the one brood-nest. The other colony, or the one to receive the others, should be disturbed or smoked at the entrance. This is done to get the bees to fill up with honey. This work should be done in the cool of the morning or the cool of the evening, when no bees are flying; and don't forget to jar the bees that are moved, and make them queenless two or three days in advance.

In the case of hybrids or blacks it may be necessary to use a little smoke after uniting, to keep them from fighting. A better way in the case of bad bees like Cyprians, in addition to smoking, is to sprinkle both lots with sweetened water. This will cause them to lick each other off; and during the process they will acquire the same scent.

It sometimes happens that one will have a lot of weak nuclei in the yard. It may take a dozen of them to make one good colony. We would advise shaking the bees of these, if queenless, all into a wire-cloth box until you have something like five or six quarts of bees. Give them a general jouncing; then in the cool of the morning, or, better, in the cool of the evening, take up a dipperful of bees and dump them in front of the entrance of any colonies that may need a little strengthening. If one colony requires two dipperfuls, give it the amount required, and so on scatter the bees among the hives that can stand or need a few more bees. There will be no trouble, if in the cool of the morning or evening, about these bees uniting or about their attacking the queen.

Do not make the mistake of trying to unite when the bees are flying. After they once get out in the air, when they find their hive gone, they will, of course, go back to the old stand. Remember to do all the uniting in a cool atmosphere. Very few bees will return to the old stand, if, during the move from the old stand to the new, the hive is pretty well bumped around. Right

here score a point in favor of Hoffman frames or any good self-spacing frames.

If one does not have Hoffman frames, let him shake the bees off in front of the entrance of the other hive—that is, the hive that is to receive the two lots of bees, and allow them to run in. The point is, that, in order to make bees stay in the new location, they should be “shook up” or disturbed. Right here the principle of “shook” swarming, that has been advocated so much of late, comes in, for shook swarming is nothing more nor less than natural swarming induced artificially.

For some of these tricks of the trade we are indebted to our apiarist, Mr. J. W. Bain. In this connection Mr. Bain says there is no use in trying to unite old bees, as they probably won't stay. Moreover, he says they would be of no use to any colony, as they would only be consumers, and would die off long before spring. This dovetails very nicely with the teachings of the late Henry Alley.

PREVENTING THE BEES FROM RETURNING TO THE OLD STAND WHEN COLONIES ARE MOVED SHORT DISTANCES IN THE SAME YARD.

In the fall of the year it is sometimes advisable to change the position of some of the hives, which, from the experience of the winter before, are found to be too much exposed to the wind; or, occasionally, the owner wishes to move the hives close together for the purpose of packing under a temporary shed, etc. There is often considerable loss when this is done, owing to the fact that the bees return in large numbers to the old stand; and, even though there be no hive there, they collect in bunches, and finally perish or wander all around, only to get lost. This loss may be partially prevented, if not wholly; but the moving must be done in the right way.

Very early in the morning of a warm fall day, before the bees have started to fly, is an ideal time for this work. Simply give the bees of the colony that is to be moved a good smoking at the entrance to keep them in while the hive is being carried, and then move the hive to its new position. When all are moved, and just before the bees would ordinarily start flying, blow in considerable smoke at the entrance of each hive moved, and pound vigorously on the sides with a stick. This will cause the bees to fill up; and when they come out to fly they will mark their location so that few return to the place previously occupied.

If there are too many to move before the bees would be flying in the morning, some may be moved the night before; but all moved colonies must be vigorously smoked and roughly handled by means of pounding, etc., just before they go out to fly. It is much better to do all the moving at one time, however. We recently shifted about twenty colonies in chaff hives to a new location in the same yard, and, by following this plan, had no loss.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

A COLONY on scales weighed 2 lbs. 5 oz. less after its cleansing flight than before it. If I understand it, this did not include weight of dead bees.—*Deutsche Imker*, 274.

POLLEN in a queen-cell is a sign of queenlessness; but I supposed it was only in advanced stages. The other day I found pollen in five queen-cells in a strong colony queenless only two days.

HEARTSEASE was formerly not worth considering here as a honey-plant, because of its scarcity; but of late years it has become plentier, and this year it is worth many a dollar. Same with dandelion.

WM. McEVoy is asked, *Canadian Bee Journal*, p. 242, "Can combs that have had foul-brood matter in them be made safe to use again?" He replies, "No, positively no." Likely that refers to American foul brood.

ERNEST THOMPSON SETON says, *Ladies' Home Journal*, p. 6, "Queens of the honey-bees live one or two years, but some have been kept alive for five years." That's a bit off according to my books. For every one superseded at one year, five live to be three.

DR. BRUENNICH, *Schweiz. Bztg.*, p. 352, gives a frame-spacer that will appeal to extracting men. Simple and effective while in the hive, when put in the extractor the spacer is quickly turned out of the way on a sort of hinge, and then it's just the same as if no spacer were present—not expensive, either.

How THICK is worker comb? "An inch thick," says one. "Never more than $\frac{1}{2}$," says another. Neither correct. I suppose it is about $\frac{1}{2}$ thick the first time brood is reared in it, and each set of brood increases the thickness of the septum, and so the thickness of the comb, until it is an inch thick or thicker.

PERCOLATION with the Miller feeder is the easiest thing possible. Many a bag of sugar I fed in this way. First I went around and put a feeder on each hive, leaving it uncovered. Then I put sugar in each feeder, leaving it uncovered. Dry sugar will not start robbing. Then I went around to each feeder, poured in cold water, and covered it up.

W. S. ADKINS, if I had that long queenless hive of yours, p. 598, and didn't break it up, here's what I would do: Exchange three of its combs for three combs with queen and adhering bees of another colony; put these in an upper story over the long queenless colony with newspaper between the two stories, and a few days later put them down in the hive. Introduce a queen to the other colony.

I'VE STOOD IT long enough to be in ignorance, and now I want to know if Oliver Foster and Wesley are related. If so, neither one need be ashamed of his relative. [Wesley speaks of Oliver as "my father."—ED.]

DR. A. F. BONNEY, p. 586, a box-hive may be thoroughly propolized inside; but my oldest movable-frame hives are far from being water-proof inside. I grant you that painted hives are more beautiful; and if my hives were much seen I would paint them; but the cost of painting put into flowers appeals a good deal more strongly to my "bump of beauty-love."

DR. MASSEN threw colonies upon foundation that was made of wax from colonies badly infected with foul brood. In every case the colonies on this foundation remained healthy.—*Deutsche Imker*, 269. [Different bee-keepers in this country have tried the same experiment with precisely the same result. We do not think there is a particle of danger of transmitting disease through foundation as it is usually made, especially when it is made in a regular foundation-factory.—ED.]

D. M. MACDONALD, *British Bee Journal*, p. 304, says that "bees like new combs best when the active season opens," and he rather conveys the idea that they prefer foundation to old combs. I wonder what is really the whole truth about that. I have known what seemed to be a preference for foundation or new combs, but nearly always my bees show a marked preference for old combs, the blacker the better. A good many times I have known the queen, in extending the brood-nest, to jump over a frame of foundation, or a drawn comb never bred in to occupy an old comb beyond. I read this over to my assistant, and she said, "Yes, this summer I saw a case where she jumped over two such frames in the center of the hive."

I. HOPKINS, you say, page 618, that Ohio foul-brood law has the fatal defect of *all* our foul-brood acts. Colorado has the same law as Canada, allowing the inspector to compel transference from box into frame hives. [We ought to have mentioned, on page 618, in a footnote, that the conditions in America are far different from those in Great Britain. If we are correct, the cottagers of old England, as a general rule, do not use the modern frame hive, while in this country the box hive or any hive that does not have movable combs is getting to be the rare exception. There is, therefore, not the same need of having a law that makes the use of movable frames compulsory. Our Ohio law we consider quite adequate, therefore, because the inspector always has the power to order treatment for colonies, whether in box hives, straw skeps, or what not; and it is up to the bee-keeper himself to transfer unmovable combs, because that is the only way he can ever eradicate American foul brood, at least. European foul brood could be handled by the dequeening process, possibly.—ED.]

Bee-keeping in the Southwest

By LOUIS SCHOLL, New Braunfels, Texas

SCHOLL'S METHOD OF REMOVING HONEY.

For years we have not owned a bee-brush of any kind, removing tons of honey without brushing a single comb. We feel that this is the most practical way, and a time-saver as well as a money-saver. While visiting one of our progressive bee-keepers in Southwest Texas, Mr. Louis Biediger, at Atascosa, we had occasion to show him the advantages of our way of removing the honey, and he recently wrote us as follows in regard to it:

I wish to thank you for the valuable hints which I learned from you during your recent visits at my home. I have tried your way of taking off honey, on five separate occasions, and I must say that I do not brush the bees off the combs any more. Although I can probably not work this "super-jerking" quite as fast as you can, still I can do it fast enough to have the honey on the wagon and out of the way before the bees start to robbing, and this is something I never could do when taking off honey the old way or even by the Coggsball fashion.

Our way is simply to use shallow ideal supers throughout, as we have advocated for years; and when these are filled it is an easy matter to smoke the bees down, or most of them, and then shake out the rest while the supers are rapidly handled and brought to the wagon. They are then loaded and covered up bee-tight to prevent robbing. We begin with one hive, taking off the cover quickly with the left hand, then blowing in smoke to run the bees down. In the meanwhile, with the left hand we remove the cover from the next hive, each time throwing it in front of its respective hive, so that the bees can crawl back. Smoke is then blown into the second hive while the cover of the third hive is taken off, and so on until five hives standing in a group are all open, and the bees sent scrambling below out of the way. Then we return quickly to the first hive, give it a few more puffs of smoke, then the second, and so on, until all have had the second smoking. When this is done, the supers are ready to be jerked off and leaned against the front of the hives at one side so the rest of the bees may crawl out.

The next or second round of supers is even more quickly removed, since the bees in them are already scrambling downward from the smoking received from the first supers removed. We can remove honey faster this way than by any other plan, not excepting the bee-escape method, since we can take the honey off in about the same time that bee-escapes could be put on. Then, besides, bee-escapes are out of the question at outyards many of which are over twenty miles away. In the time that would be required by an extra trip to put on escape-boards, we take off the honey and get started home with it before the bees are hardly aware of what has happened.

WHAT KIND OF PAINT TO USE ON BEE-HIVES.

We have always been a firm advocate of painting hives, as the readers know. Others have been writing on the subject, and several have mentioned the kind of paint to use. On page 576 the editor endorses the use of pure lead and oil only, in preference to lead and zinc paint, claiming that, because the lead-and-oil paint without zinc does not become hard and firm, it chalks off readily so that the surface can be repainted to look as good as new, whereas lead-and-zinc paint flakes off in scales, leaving a rough surface to be repainted.

Although this is true, we do not like the lead and oil without zinc, just for the reasons mentioned. It does not hold on well enough, and it chalks off so quickly that it must soon be repainted. If zinc be added, the paint has a harder surface, holds on better and longer, hence is more durable and satisfactory, beside being less expensive. It is true that, if too much zinc is used, the paint before long peels off; but this is a mistake, for the zinc should be used only in the right proportion to give good results. We have tried all kinds of paint, and applied it in many different ways; but the best results that we have obtained have been with a good well-mixed lead, zinc, and oil paint. The best way of applying this to give the most satisfactory results is to have the first coat thin, spread on well, and not too thick. This should be on at least six months or a year before the second coat is applied. After waiting this long, two more good coats are given, and for durability we know of no better method of procedure.



BEE-STINGS AND RHEUMATISM.

This is an old worn-out subject with some; but to others it is entirely new. I am still of the opinion that there are two sides to this much-discussed question. This is brought out by some of my own experience in the first place, and by that of others in the second. Then when some of our best physicians tell me that "it seems reasonable enough that there may be something in it," although they have not made an application themselves, we begin to wonder where we are at. Right in this line our family physician gave me the following clipping as coming from an authority:

Maberly reports several cases of chronic (apparently intractable) cases of rheumatism which were cured to all intents and purposes by being exposed to bee-stings at regular intervals. One, a man about 35 years of age, had been laid up three times with rheumatic fever for six or seven months each time, and found his joints increasing stiff with each attack. In his case the stings did marvels. His feet had always been stiff from the first attack, but now he could walk anywhere, and "did" about twice a week every Sunday. His ankle movements were perfect, and he stood on his toes quite easily. He says that he always ate and drank what he liked, and whenever he could catch a bee in his garden he did so and put it on. Maberly saw a number of other cases, some of old-standing chronic rheumatism, both in elderly and younger subjects, and all were doing well; while, in nearly all, the usual remedies had been tried without any good results.—*Am. Med. Ass'n Journal*, Aug. 20, 1910.

Conversations with Doolittle

At Borodino

WHEN TO SET BEES IN THE CELLAR.

"I have built a new cellar especially for the bees, therefore have come to ask you when it is best to put the bees in it."

"I have set my bees in the cellar as late as December 25 and as early as November 3."

"There is quite a range between those dates. A bee-keeper who winters in the cellar told me yesterday that he thought the fore part of December was about right."

"I used to think the same, being very anxious to give the bees an opportunity for the latest possible flight, so that they could the better stand their long confinement; but after reading several articles on the subject I resolved to experiment a little; so on November 3 I set a part of my colonies in the cellar, probably about one-third of all I had. As I remember, these bees had not flown after about October 20, and I feared they would not come out well."

"But was not the weather so warm that they bothered by flying out badly while being carried into the cellar?"

"That was where I learned something. The mercury was up to nearly 48 degrees, where bees would fly nicely in the spring of the year, and I expected trouble in getting them in, on account of the necessary disturbance. However, much to my surprise none offered to fly, and were very much less disturbed than any I had ever cellared before. And what pleased me was this: The hives, bottom-boards, etc., were dry and nice, instead of being wet or covered with snow or ice, as was frequently the case where I had left them out till into December."

"On November 11 those left out had a fine flight—as good as I ever knew bees to have in the fall; so on the 12th I set in another third, leaving the rest out for a still later flight. These also went in dry and nice, with little disturbance when setting in. The last third was left out till the fore part of December, or the usual time of setting in. There had been rains and snows, with much freezing weather; and as there seemed no prospect of further flight I thought best to set them in before the hives were entirely covered with snow. The hives were now frozen down, so that, in prying them up, there was quite a cracking and consequent jarring, which disturbed the bees so that they came out all over the fronts of the hives, after they were in the cellar, and many flew out on the way. I then learned that bees could be set in the cellar with much less disturbance when the weather was about as warm outside as inside the cellar, and all of my experience since has told me that any time after October, when every thing is dry and nice, with

the mercury at from 40 to 50, it is time to hustle the bees in.

"As I had no provisions otherwise, of course those set in the cellar last had to be set out first. Again, I found them easily disturbed when setting out, showing that they had hardly quieted down in all winter, or else remembered their experience of the fall previous. When all were out, there seemed little difference as to their average strength, although, if any, it was in favor of the first set in. Later on, however, those last set in and first out suffered quite a bit from spring dwindling, thus proving that they had not been as quiet as the others during the winter."

"But what about those set in before the good flight, and those immediately afterward?"

"Between the first and second lot set in I could see no difference, this proving that a late fall flight was not quite as necessary as I had always supposed. I believe that there is nothing gained by leaving colonies out later than the fore part of November, providing all is in readiness for their being put in, other than their having a very late flight. On the contrary, by leaving them out beyond a prospect of getting them in all dry and nice, generally resulting in a day when the hives are frozen down, we are inviting poor wintering. All concede that bees will not winter as well with the inside of the hive covered with frost, which melts as soon as placed in the cellar, thus causing every thing inside of the hive to be damp, even if the hive is not soaked to quite an extent from wet weather, which is more likely than the other way with late cellaring."

"But tell me something about the cellar—the right temperature to be maintained, etc."

"The character of the cellar has much to do with successful wintering. Unless an even temperature, or as nearly as possible between 40 and 48 degrees, staying the larger part of the time between 43 and 45, I should prefer to have the bees left in good chaff-packed hives on their summer stands."

"But will not the warmth of the bees keep the temperature of the cellar about where it should be?"

"Not by any means. If that were so, a room above ground would be all right. The worst wintering I have ever known has been in rooms partly above ground, such as a basement under a shed or barn, one in which the mercury would go down a little below freezing, and stay there most of the time. No, the cellar should stay between 40 and 48 whether there are bees in it or not, to be of the best service in wintering bees. Where it takes the bees to keep the temperature up in very cold weather, it will be very much too warm in mild spells during winter, and especially so in early spring before it is time to set them out. And, besides, the bees must 'burn' a much larger quantity of honey to keep up the needed temperature when the cellar is cold, even could they do this."

General Correspondence

EUROPEAN FOUL BROOD.

How Dr. Miller Succeeded in Treating European Foul Brood by Both the Alexander and the McEvoy Plan.

BY DR. C. C. MILLER.

[After we visited Mr. S. D. House, and learned of his experience in treating European foul brood by the Alexander plan, as related on page 611 editorially, in our issue for Oct. 1, we had a curiosity to know how Dr. Miller was coming on, and we accordingly wrote him, asking him to give us his final conclusions. We suggested at the time that if he would get rid of his sprinkling of black blood the problem would be much simpler for him. The following is the article which he sends in reply.—Ed.]

At the close of last year I went into winter quarters with the expectation—indeed, rather with the desire—that I might have cases of European foul brood to deal with this year, so that I might learn more about the disease. I was not disappointed. The disease appeared in greater or less degree in 27 hives. It appeared in those that had been treated by the modified Alexander treatment, and also in those that had been brushed upon foundation. How much of it came from outside apiaries there is no way of telling; but I suspect I would have had enough to fool with if there had not been any surrounding apiaries.

There was no very bad case. Indeed, in 11 of the cases there were so few bad cells that I did not think it worth while to meddle, and the bees cleaned up of their own accord. Last year my chief effort was to get rid of the disease. This year I didn't care for that so much as to learn more about it, so my efforts were more or less experimental. Last year, by a mere blunder, I departed from the Alexander method to the extent of giving the diseased colony a virgin queen ten days sooner than the regular Alexander recipe called for. As that had succeeded, my chief effort this year was to see whether another ten days might not be cut out. So in most cases I destroyed or removed the queen, and at the same time gave to the colony a virgin. That would generally leave the colony eight or ten days without a laying queen. In several cases the virgin failed, and a second virgin was given, which increased the time of queenlessness; but I did not see any difference in results; and, so far as I now see, just as good results can be had from this shortened treatment as by giving the full Alexander time.

There can be no question that *if* just as good results can be had by giving a virgin immediately upon the removal of the queen instead of waiting the regulation twenty days, there will be a great gain. I think I hear some one say, "You do well to put in that 'if.' Now, why not wait till you have

tried the matter more fully, instead of rushing into print with your half-baked ideas and dreams?" True enough; that would be a good way. But, in the meantime, if I tell about what I have tried, some one else may help to try the matter more fully. Besides, it would have been worth many a dollar to me if, before I had melted up good combs by the hundred last year, some one had told me that he had made even a partial success by giving a virgin immediately upon the removal of the queen.

And right here I want again to record my thanks to the editor of GLEANINGS, who insisted that I should give a trial to the Alexander treatment, which I did only after having treated most cases by the McEvoy plan. If it had not been for trying to please him, I doubt if I would have tried unqueening at all.

No. 67 was a weakling, of three brood or less, that had bad brood. It went queenless of its own accord, and reared a young queen, but remained diseased. That confirmed, if such a thing needed confirmation, what Mr. Alexander had insisted upon, that a colony must be strong to overcome the disease.

No. 12 and No. 14 were diseased, neither of them strong. I caged the queen of No. 14, took the hive from its stand, put in its place an empty hive in which were clean combs and a frame of brood from a healthy colony; and in this hive I put the caged queen. The object of caging the queen was merely to keep her in the hive until she would have enough company to hold her there. Understand, there was not a bee in the hive except the caged queen; but immediately the field bees began to return to the hive; and as soon as a few had returned I liberated the queen. The colony was very weak, but when brood appeared it was all perfectly clean. Later on, however, there was some bad brood. Did it come from outside? It hardly seems possible that it could have come from inside, for there were no workers in the hive except such as returned to the hive from the field, and it is generally understood that a bee going from a diseased colony to the field carries no disease with it, for on this depends wholly the success of the Baldrige plan. Anyhow, if those bees brought the disease it should have shown in the first brood.

The brood and bees taken from No. 14 were given to No. 12, whose queen had been killed four days previously. The next day a virgin was given, and in due time she began laying. Forty days after the killing of the old queen, No. 12 was found clean; but two weeks later still, some bad brood was present. Was that bad brood imported, or was it a home product? I'd give something to know.

In spite of the final apparent failure of Nos. 12 and 14, I think the plan is worth further trial, for it is entirely possible that each of them got the disease finally from the outside. But if I were trying the same thing over again I would kill the queen of No. 12

on the same day as giving the virgin and the bees and brood from the other colony.

In general I have much faith in this treatment: Make the diseased colony strong by adding brood or *young* bees; kill the queen; give a virgin or a queen-cell, and then trust the bees to do the rest. I know that cuts twenty days off the regular Alexander treatment, but I believe it will work, because it did work in nearly all—and I *think* in all—the cases in which it was fairly tried.

Marengo, Ill.

[As the Alexander plan has been spoken of considerably of late it seems pertinent to republish it just as Mr. Alexander gave it to our readers in 1905, after he had cured his entire apiary of 700 colonies without so much as destroying a comb, and here it is:

This cure is on the line of introducing new blood into the apiary, which will necessitate getting a choice Italian breeding-queen, one of the best honey-gathering strains that can be procured. For this special purpose I prefer quite yellow Italians. Now for the cure.

Go to every diseased colony you have and build it up either by giving frames of maturing brood or uniting two or more until you have them fairly strong. After this, go over every one and remove the queen; then in nine days go over them again, and be sure to destroy every maturing queen-cell, or virgin if any have hatched. Then go to your breeding-queen and take enough of her newly hatched larvæ to rear enough queen-cells from to supply each one of your diseased queenless colonies with a ripe queen-cell or virgin just hatched. These are to be introduced to your diseased colonies on the twentieth day after you have removed their old queen, and *not one hour sooner*, for upon this very point your whole success depends; for your young queen must not commence to lay until three or four days after the last of the old brood is hatched, or 27 days from the time you remove the old queen. If you are very careful about this matter of time between the last of the old brood hatching and the young queen commencing to lay, you will find the bees will clean out their breeding-combs for this young queen so that she will fill them with as fine healthy brood as a hive ever contained. This I have seen in several hundred hives, and have never seen a cell of the disease in a hive after being treated as above described.

It is not necessary to remove any of the combs or honey from the diseased colony; neither is it necessary to disinfect any thing about the hive. Simply remove the old queen, and be sure the young queen does not commence to lay until three or four days after the old brood is all hatched. This treatment with young Italian queens is a perfect cure for black or European foul brood.

In regard to those old queens that were formerly in your old hives, I think it best to kill them when you first take them from their colonies—not that the queen is responsible for the disease, for I am sure she is not; but a young Italian queen that has been reared from a choice honey-gathering strain is worth so much more to you that I can not advise saying these old queens.

I have experimented along this line considerably, and found, after the colony has been without a queen 27 days, as above directed, it will usually be safe to give them one of these old queens, and the cure will be the same. Still, there have been exceptions, so I advise killing them at once.

Now a few words about your breeding-queen. Buy one of the very best you can for this purpose; for upon her real merits rests the true value of your apiary hereafter. I would buy a three-comb nucleus with this valuable queen, so as to run no risk in introducing her to a full colony.

Apparently Dr. Miller has been very largely successful, even with his old strain of hybrids; but we presume he would be much more successful if he would eliminate his black blood, which, apparently, he pro-

poses to do. It would be a great thing if we could save the old combs from colonies affected with European (black) foul brood. At other times we could readily see it would be more profitable to apply the shake-out or what is generally called the McEvoy plan.

We are beginning to feel (we can't arrive at a positive conclusion yet) that European foul brood in the hands of intelligent beekeepers who use exclusively Italian blood of vigorous stock need not make very much headway if any at all. If E. W. Alexander originally, and later Mr. S. D. House and Mr. Irving Kenyon, have no trouble from the disease when the neighbors have it all around them, we may reasonably suppose that others can enjoy the same immunity providing they introduce Italian blood and follow either the McEvoy or the Alexander treatment according to conditions. American foul brood, on the other hand, will continue to have its terrors, even to the up-to-date bee-keeper; for this disease does not, apparently, yield so readily to treatment as the European type.—ED.]

ADVERTISING HONEY.

How to Get it Before the Public in the Most Forceful Manner.

BY E. G. HAND.

That article on advertising honey, page 558, Sept. 1, brings up a phase of the honey business that is entirely too much neglected. As one who for ten years has been in the bee-keeping and honey business, and who, during the same time, has been a student of the science of advertising, I have many times wondered that the advertising of honey has been so almost (in fact, I might safely say practically *entirely*) neglected.

Here and there one may see, occasionally, in a local paper, the announcement by a merchant that he has received a consignment of honey, and now and then the big city stores mention it casually among their wares; but as for any organized or earnest effort on the part of the honey-producers, either collectively or individually, to bring their product to the attention of the public through the medium of the press, I have yet to see the first instance of it.

Why is it that the various concoctions masquerading under the name of "corn syrup" have such an enormous sale? Read the papers and magazines, and you will quickly find out; for you will see their names and illustrations staring you in the face everywhere you turn, while it is rather the exception than the rule to see the word "honey" in print. As a consequence, the average bee-keeper is probably more familiar with the alleged merits of these products and their ilk than he is with the real merits of his own stock in trade. The same may be said of the hundred and one cereal preparations which have invaded the market with-

in the past ten years, and which now are to be found regularly on most tables.

This should not be. The honey industry is big enough and rich enough to invest a few thousand dollars a year in a publicity campaign, which, if properly conducted, would produce results beyond the imaginings of any one who has never advertised in the present-day sense of the word.

It might be argued that the profits in the honey business would not stand for an expensive advertising campaign. The man who raises this objection, however, is simply mistaking cause for effect. It would be a very short time, under a scientifically conducted system of publicity, until the demand for honey—real honey, bearing the brand of purity advertised, whatever that might be—would be such as to advance the price to a figure which would pay the cost of the advertising a dozen times over.

Local advertising by individual bee-keepers is as sadly neglected as is general advertising by the fraternity at large, as represented by the national and local associations. My own experience has been, however, that it can be made productive of just as great results locally as the other scheme would produce nationally; but, like the larger campaign, it must be properly and intelligently conducted. A "standing" advertisement, as suggested in the article referred to at the beginning of this one, is perhaps better than none; but little more can be said in its favor. It will catch the person who is out looking for honey—the person who would most likely eventually find his way to the advertiser any way—but in the person who is not in the habit of using honey it excites no interest (unless, possibly, to make him wonder what sort of flower a "bonney" is. The fact that the advertisement is cheap is little recommendation from a business point of view. It is not cost, but results, that count in advertising).

A few years ago, through the judicious use of a small space in a local weekly paper I disposed of more honey in my home town than it had ever used before, a great deal of it first hand, right from myself to the customer (without any peddling), and the rest through the local grocery stores, while "farmers'" honey was being offered for sale in the same stores at a price 20 per cent lower than I received. Of course, a previous reputation for producing a first-class article helped the campaign, but the advertising rounded it off nicely.

The first requisite in an advertisement, whether it be of honey or anything else, is that it shall be news, and that it shall continue to be news, and to make people read it, and look for it, every time it appears, and to miss it when it fails to appear, which latter event, in a really properly conducted campaign, should never occur. The standing advertisement is news the first time it appears, or the first time a reader sees it, after which it is about as interesting as a story of an accident published in the same type time after time.

It will pay any bee-keeper who has any considerable amount of honey to sell, and who wants to get all there is in it, without the intervention of too many middlemen, to take a space, even though it be a very small one, in his local paper, and tell a story, no matter how short, so that it is interesting, about his honey or his bees, and a different one each issue, be it daily or weekly. Don't let the story become old, or the public will begin to lose interest in it, even after it has been rejuvenated, even as they will lose interest in your good honey should they by any chance ever get a can of inferior honey bearing your label.

Cobalt, Ont.

SOME EXPERIMENTS ON STIMULATIVE FEEDING.

Undue Stimulation Out of Season Wears Out a Queen so that She is Likely to Fail During the Height of the Honey-flow.

BY ALBIN PLATZ.

I have a small apiary within one mile of the heart of Cincinnati; and during the latter part of last summer and early this spring I conducted some experiments on stimulative feeding, selecting for the purpose two colonies which were practically equal in strength—i. e., the number of bees, and the amount of brood and stores. Both had queens of the same age, having been hatched during the fore part of July, 1909. Deciding to use hives No. 1 and No. 3 I commenced operations by placing an Alexander feeder under hive No. 3; and every night, just before dusk I fed this colony one pint of warm syrup (equal parts of sugar and water). I continued feeding until our first frost. I started feeding the latter part of August. The other colony, No. 1, I did nothing to. On Oct. 19, while packing my colonies for winter I carefully examined both colonies and noted that the stimulated one was far superior in every way to the other, and weighed fully 20 lbs. more. I may add that I prepare my colonies for winter by placing a half-depth super filled with rags and dry leaves on top of the brood-chambers, and have never lost a colony packed this way. Having replaced the frames and noted that the queens were all right, I left them on their summer stands, not to touch them again until the following spring.

On March 4 the bees commenced to carry in loads of pollen, so I at once put the feeder under hive No. 3 again, and fed it one pint of warm syrup every evening. The first week in May I opened both hives, and was surprised to find hive No. 3 literally boiling over with bees, and eight frames out of the ten almost solid with brood in all stages, but very little honey. I at once put on a second story of extracting-combs to give the queen plenty of room. Locust-trees being in bloom now, I stopped feeding. On opening hive No. 1 I was disappointed

at its apparently poor condition, having only about five frames of brood and a moderate number of bees. But conditions were soon reversed. White clover commenced to bloom, and at the same time hive No. 3 steadily commenced to lose in strength while its partner, No. 1, forged ahead by leaps and bounds. Its queen was larger and more active, filling every available cell with eggs, while the bees had almost filled the second story with honey. All this time hive No. 3 steadily lost in strength, and on July 8 the queen was superseded. No doubt the stimulus caused by feeding induced the queen to overexert herself, and the result was that she played out when she ought to have been in her prime. This hive remained rather weak all summer, and gave me only 40 lbs. of surplus honey (extracted) while hive No. 1 gave 92 lbs., also about 25 lbs. of sealed combs, which I reserved for emergency in case any colony should be short of stores this fall or next spring. I am convinced that, when all colonies have sufficient stores, it is unwise to feed, and cause the queen to expend her energy when it is not needed as much as during or just before the main honey-flow.

Were it not for the fact that No. 1 swarmed (due to carelessness on my part by overlooking some queen-cells) I am sure my surplus from this colony would almost have been doubled. At this writing the stimulated colony has very little brood and only a fair number of bees, while all of the others are in excellent shape. I believe that colonies which are left quite alone are the ones which give us the best results, and that the bees know better than we when to rear brood and when to retract.

Cincinnati, Ohio, Sept. 17.

ESTABLISHING A MARKET FOR HONEY IN THE RURAL DISTRICTS.

BY J. J. WILDER.

It is very encouraging for a bee-keeper to have a ready demand for the honey that he produces, especially when he can feel sure of all returns; and there is nothing that will create enthusiasm in a bee-keeper quicker than to have orders for twice as much honey as he can produce each season. If the people living in rural districts are supplied, this is sure to be the result.

On the public highways, for fifteen or twenty miles I have established what I call my "honey stations." A farmer every five or six miles is kept supplied with honey as long as my supply lasts. Most of these farmers live near one of my apiaries or else at some point to which I can carry the honey without greatly inconveniencing myself. I carry out about as much honey as I think will be needed when I go to bring in a load or to work in an apiary. Sometimes the supply at one or more of the stations runs low before I return again; and, when so, the

parties very often stop at my packing-house while in the city, and carry out a supply themselves.

Usually, at each of the stations there is a sign, "Honey for Sale," and it is surprising how much honey is disposed of in this way to passersby. Many city people while driving through the country patronize these stations rather than buy their honey in the city. Also many tourists buy quantities and carry it to neighboring States. Even the chicken-peddlers load it in their wagons and carry it in this way for miles around. They sell it or exchange it for eggs, chickens, butter, and other farm produce. (This last idea I got in Texas in my boyhood days when my father was peddling.)

The honey is all sold to these stations at regular wholesale prices, the peddlers paying cash for what they buy, and the "stationers" pay as it is sold. The honey that I have reference to is extracted or chunk honey, put up in pint, quart, and half-gallon Mason fruit-jars, and also in one, two, five, and ten pound pails. It is not necessary to do any crating. I have found that this is the easiest way to dispose of honey, and the quickest way to establish a sure market. I have to resort to the city markets to dispose of a part of my crop, but it is not as satisfactory a way.

Cordele, Ga.

WHY YOUNG BEES ARE SOMETIMES DRIVEN OUT OF THE HIVES.

BY C. W. POWELL.

On p. 566, Sept. 1, Mr. E. G. Pettit wants to know the reason why his bees are killing the young bees. I happen to know the cause and the remedy. The cause is lack of stores; and the remedy, of course, is feeding. This puzzled me for several years, for I kept seeing young bees, that were apparently sound and healthy, thrown out of the hive in great numbers. I also noted that some hives would suddenly become greatly reduced in bees, but until this season I did not discover the cause and apply a remedy. As often before, I found droves of young bees running away from the hives. I watched until I located the hive they came from, then looked into it and found there was no honey, so I began feeding, and the trouble ceased at once. Young bees are very greedy, and the old bees will sacrifice the young ones before they will starve themselves. It is very important to watch carefully, for it is useless to feed for stimulative purposes unless sufficient food is supplied for hatching brood.

MUST WHITE-SWEET-CLOVER SEED BE HULLED TO GERMINATE QUICKLY?

There has been some discussion about the germinating of the hulled and unhulled sweet-clover seed, the general opinion being that the seed must be hulled or else it will not germinate for several months. I took a handful of seed this fall, covered

it upon the ground, and wet it. It was up in ten days. This was the white variety. Sweet clover will not bloom the same year it comes up, no matter how high it grows—at least this has been my experience. In one sense it is an annual. If the seed gets into the soil as soon as ripe, or in time to come up that fall, it will bloom the following season, and so on; but it must have two seasons' growth. My experience has been entirely with the white, so I know nothing about the yellow variety.

QUEEN LAYING IN QUEEN-CELLS.

Does a queen lay in queen-cells? If so, the theory that worker eggs are laid in worker-cells and drone eggs in drone-cells, because of the size of the cells, is exploded. The queen surely could not lay a worker egg in a queen-cell if the size of the cell counts for any thing.

AN UNDERSIZED QUEEN THAT MADE A LOT OF TROUBLE.

I once thought I had a colony of queen-killers, as I gave queens and cells repeatedly, the bees destroying them all. I had gone over the combs time and again without finding the queen; but one day when I opened the hive I saw a ball on the bottom-board, and when I picked it up and scattered the bees I found a bee about the size of a worker, but shaped more like a queen. I killed it, and this ended the trouble. Now, if I had scattered these combs of bees around among other hives, this diminutive queen would have been killed. Until she was turned on her back she looked like a worker, but the under side of her was very different.

Joplin, Mo.

A SHORT CROP IN IMPERIAL VALLEY, CAL.

Cotton-fields Taking the Place of Alfalfa-ranges.

BY J. W. GEORGE.

As the season of 1910 is coming to a close it may be of interest to some to know just what the results were in Imperial Valley. I have talked with a number of our best bee-men, and find that they are all agreed that we are short in our crop. Mr. Wagner, our bee-inspector, estimates we are short about one-third of the normal crop, while Mr. Perkins, who is a closer observer, estimates the shortage to be about half a case.

The question is, why is our crop short? In my opinion, there is just one answer; and that is, there has been too much of the alfalfa-range plowed up and put into cotton. The farmers have the cotton craze; and where it will all end is problematical. It now looks very much as though the bee-men would have to seek new ranges, for the cotton acreage will be increased very largely next year; and if this is done at the expense of alfalfa, what will the crop be next year in view of the fact that it was cut down one-third this year?

Cotton may be a good honey-plant in some places, but it has not proved so here as yet; and I fear that many of us will find ourselves in an unenviable position next spring, for the cotton bloom does not come in this locality until the strength of the colony is spent. Then when it does come, the bees breed up wonderfully; but by the time the colonies get strong enough to store surplus, the cool nights arrive and the hives are full to overflowing with bees with no honey in the combs, and the nights too cool for the cotton to secrete nectar.

I may be wrong in my conclusions; but I am not enthusiastic over the outlook; and to those who contemplate coming into the valley to keep bees I would say, make haste slowly until we see what effect the cotton is going to have on the bee industry here.

There was a shortage of water at the latter end of the season, and all that can be heard on our streets is the water shortage and the future of cotton in Imperial Valley. In a way it is very similar to the condition three years ago when every one had the cantaloup fever. The people went cantaloup crazy, and there was but one remedy—get "stung." However, cotton is a staple, and it looks very much as though it had come to stay, so that, from a bee-keeping standpoint, the future looks very discouraging, and I myself am beginning to wonder where I can go to be sure of a crop.

The same men operated the same bees and under the same conditions as last year; but this year I have noted that we are very short in our yield. We got a very good price for our honey, which balanced things up somewhat; but if there is a big crop on the coast next year, and the cotton acreage increases while the alfalfa decreases, where shall we be?

Imperial, Cal.

NEW ENGLAND FAIR.

The Apiarian Exhibit at Worcester, Mass., Sept. 5-8, 1910.

BY BURTON N. GATES.

An extraordinary display of comb and extracted honey, in amount exceeding half a ton, was made by Mr. R. H. Holmes, of Shoreham, Vermont, but which, through courtesy to the less professional and extensive bee-keepers, was not entered in competition. Mr. Holmes says his crop was entirely removed before the first of August, having come exclusively from basswood and clover. One seldom sees finer honey, especially that which is produced in New England. Besides the superior quality of Mr. Holmes' product, both in flavor and color, is the even grading and "polishing" of his sections. Buyers of this "Red, White, and Blue" brand of comb honey have remarked to the writer that they are always certain to find all sections alike in a case. This is a worthy example for packers of comb honey.

Mr. Holmes' exhibit was well displayed, and attracted much attention.

The facilities for displaying the comparative exhibits, on the contrary, were poor. For instance, the comb honey was found in a glass ice-chest, which stood in a dark corner of the hall. It was utterly impossible for visitors to gain any idea of the quality of the honey shown. The fact that the management does not provide better space and more liberal premiums or a larger schedule is declared to be preventing the bee-keepers from entering their products. Yet those who were ambitious enough to make exhibits are to be congratulated.

Three premiums were offered in each of three classes. There were several competitors in each of the honey classes, and but one in the class calling for a "colony of bees in 8 or 10 frame hive." Premiums were awarded as follows: Comb honey, 10 sections, 1st prize, \$2.00, Harry G. Sheppard, Globe Village, Mass. Second prize, \$1.50, J. Sidney Whittermore, Leicester, Mass. Third prize, 50 cts., Harry S. Granger, West Auburn, Mass.

Extracted honey, 10 pounds in glass, first prize, \$2.00, Harry S. Sheppard, Globe Village, Mass. Second prize, \$1.00, J. Sidney Whittermore, Leicester, Mass. Third prize, 50 cts., Harry S. Granger, West Auburn, Mass.

Colony of bees, first prize, \$3.00, Harry S. Granger, West Auburn, Mass. Second prize, \$2.00, no award. Third prize, \$1.00, no award.

College Park, Md.

SWARMING.

Its Absolute Control, Together with the Production of a Large Amount of Surplus.

BY F. H. CYRENIUS.

Most bee-keepers will probably agree with me that the production of a frame of brood requires a frame of honey about the same thickness as the brood. Now, there are times when the frame of brood seems more valuable than the frame of honey, for the bees from the frame of brood may bring in two or more frames of honey.

In my plan for swarm control, as in all other plans, the colony is made as strong as possible before the harvest, usually an upper story having been added at fruit-bloom. About one week before clover blooms, the queen is confined in a very shallow chamber, $3\frac{3}{4}$ inches high, holding frames in which the combs are but $2\frac{1}{2}$ inches deep, one sheet of Langstroth foundation just filling three such frames.

When the honey-flow starts in at its height the queen is caged in this very shallow body, the upper stories, all the brood, etc., being taken away, leaving nothing but this very shallow body with its caged queen. Upon this body, surplus apartments enough to accommodate all the bees are placed.

The colony now has brood and a queen, and is, therefore, in a normal condition. From seven to ten days after caging the queen, observe if cells have been started, and, if the queen is to be kept, destroy such cells. If a large colony were hived or shaken in such a shallow brood-chamber without any brood, swarming would be the rule; therefore, when the brood is taken away the queen should be caged and the supers put on, the object of confining the queen in the shallow chamber beforehand being to get enough brood started to hold the colony in a normal condition.

The situation is now mastered. The queen should be kept caged from two to three weeks, and then allowed her liberty on the shallow combs. By the time the colony would be ready to swarm, the season is over. If not, the queen may be caged a second time, locality deciding as to the advisability of this.

If the colony is run for comb honey, the force will be directed to the sections. If run for extracted honey, simply leave the supers on, as many as are needed, and at extracting time not a cell of brood will be found in the extracting-combs, and there will be no danger of losing the queen.

During the time that the queen is not caged in the shallow chamber she should be confined with an excluder, which should be removed again when the queen is to occupy the original combs for the purpose of filling with eggs for the subsequent flow. I find it a decided advantage in my locality to check egg-laying at this time.

There is another decided advantage in this system in renewing the queen. Simply place a selected cell in the shallow chamber, and the time required for the queen to emerge and become fertilized will be just about right to accomplish the best results. I try to get just as many laying queens by the first days of July as possible, so that the hives will be crowded with bees by August 15 for our fall honey, at which time I destroy all inferior queens, placing their brood-combs in upper bodies for the surplus. Just suppose there are two strong colonies side by side. Destroy the poorer queen of the two, and give the remaining queen the brood, etc., of the colony in which the queen was destroyed.

To summarize my plan, I get my colonies as strong as possible for the clover harvest, then relieve them of brood-rearing, to a great extent, while the bees are hard at work bringing in the honey. Then I plan to get as many queens laying as possible by July 1, and unite again for the fall harvest, leaving the colonies in fine shape for this fall flow and for the winter. This very shallow chamber forms a favorable adjunct to the brood-chamber if placed on top, and the bees allowed to fill it with honey, so that it forms part of the hive. Especially is this true for outdoor wintering, the space under the shallow frames forming the best kind of passageway.

Oswego, N. Y.



HIVE-COVERS PROTECTED BY TAR PAPER TO PREVENT LEAKING AND CHECKING.

A CHICKEN THAT GOES THROUGH THE APIARY EVERY AFTERNOON CATCHING DRONES.

BY W. E. M'FARLAND.

My apiary of 85 ten-frame colonies is run for comb honey in 4x5 sections. The illustration shows a part of it, and also my honey-house in the background, which is also the chicken-house. I have a chicken that makes the rounds of the apiary every afternoon about half-past three or four, catching drones which he eats.

Notice that the covers of the hives are protected by single-ply roofing-paper. I think this is a fine thing, as it keeps the hive-covers dry and saves the paint, and also keeps the tops from checking.

Paris, Mo.

THE SOURCE OF WATER FOR IRRIGATION.

BY WESLEY FOSTER.

As the vapor-laden winds blow from the Pacific Ocean eastward they encounter high mountain ranges; and in striking these cold granite shoulders of the continent they are forced to give up their moisture in the shape of snow in winter and rain in summer. These winds, generally coming from the west, leave most of their moisture on the western slopes of the mountain ranges; and this is why the streams flowing from the western slopes carry more water for the same area drained than the eastern-slope streams.

The higher and more continuous the

mountain ranges the more water there is for irrigation. An example of this is the Northern Colorado farming district comprising the largest stretch of irrigated land in the United States lying in one body. The Front Range extends in an unbroken line from about seventy-five miles south of Denver to the Wyoming line. The range has a great number of peaks from twelve to fourteen thousand feet in height, with the great bare stretches of slopes, ravines, crevices, and canyons from twelve thousand feet down to eight thousand feet, catching and holding the winter snow till long into the hottest summer.

This great granite wall, lying forty to fifty miles to the west of our fertile farms, always in view, a visible record of the amount of water for the coming season's crop can be easily read by the observer who has watched the interesting sight of the gradual accumulation of snow-fields and filling ravines for several years. After a week of storm, the whole range being hidden from view, the clouds rise or are dispelled, and then the wind blows as only the wind on the range can blow. The writer has seen the mountain peaks almost hidden in the mist of driving snow when the sun was shining brightly, and this at a distance of forty miles. It would hardly be comfortable making one's way through such a storm. But such winds do incalculable benefit in drifting the snow into ravines and gulches.

The timber-line is reached at about eleven thousand feet, and from this altitude down to about eight thousand feet the mountains are covered with a fine growth of pine. These pine forests catch and hold the snow



SNOW IN THE MOUNTAINS FURNISHES THE WATER FOR IRRIGATION.



A. RINGELE'S APIARY, SIERRA MADRE, CAL., CLOSE TO THE FOOT HILLS OF THE MOUNTAINS.

Mrs. Acklin described this apiary in "Bee-keeping in Southern California," page 405, July 1.

till long into the summer, most of it being melted out of the woods in average years by July 15. The preservation of the forests is a very vital element in the future of irrigation; and unless the denuded areas are replanted our water supply will be greatly lessened. The water flowing from the mountains in April and May is not used unless caught in reservoirs, and so is lost. The cheapest reservoirs are the one's nature provides, and they are also subject to the least loss. More than a foot of water will evaporate from the top of a storage reservoir in the valley while the loss from a snow-bank will be very much less, and does not entail the expense of building a dam and keeping up improvements.

The roughness of the ground in the mountains saves a large proportion of the snow because of its blowing into deep drifts. This blowing and sliding of the snow into the ravines is seen in the upper picture, looking across the ice and snow on Silver Lake toward the woods on the slopes and the high craggy peaks of the range. These peaks are the "Arapahoes," and the large hollow in the upper central part of the picture is the Arapahoe Glacier, the only true glacier in Colorado. This glacier furnishes Boulder with its water, and is the principal source for the water in the lake shown, which is a true glacial lake, owned by the city of Boulder, and is one of the reservoirs for the Boulder water supply. Much of the water flowing from the lake, however, is used for irrigation, as the water was filed upon before the lake was acquired by the city.

The pictures were taken about March 15,

1910; and though the snowfall was below normal for the year, the general characteristics of the snow storage are shown. The snowfall after March 15 was very considerable; but many claim that these late snows do not become settled and packed the way they should to last till late summer. This soft unpacked snow melts off early in the season, and also tends to carry with it the hard-packed ice-snow.

The upper view shows the Arapahoe glacier with Silver Lake in the foreground; also some of the timber which aids so much in preventing the snow from melting off early in the season.

The second one gives an idea of the way the snow drifts into the depressions up above the timber-line. Notice that there is nothing but a few shrubs growing, and these keep close to the ground.

The effect of the timber in causing the drifting of the snow to a great depth is shown in the lower picture. This place, however, is a natural depression; and the timber shown at the back of the drift is not entirely responsible for its great depth.

The first two views were taken March 15, 1910, and the other was taken June 30, 1909, which was a year of exceptional snowfall.

The snowfall in the lower foot-hills, while accumulating in the woods, melts off very early, and so does not benefit the farmers in their late irrigations unless caught and stored in reservoirs.

The means that must be adopted to conserve all the available water supply are principally three. First in importance is the preservation and replanting of the deforested areas. This is also of paramount



AN ALMOST IMPENETRABLE MASS OF SWEET CLOVER WHICH
CHOKED OUT CANADA THISTLE.

importance from an economic point of view, as lumber is becoming very scarce. Government aid will have to be applied, for there are few private parties or companies that can wait the long term of years for the returns. The government forest reserves are the proper places for these replanting operations to start. And with the popular interest which is aroused we shall not have to wait many years for this work to begin.

Second, we shall have to have reservoirs enough to impound all the flood waters which usually go to waste. In many districts this is almost fully accomplished, and the saving in floods averted is beyond computation.

Third, it has been found that an underflow exists in nearly all parts of Eastern

practiced in California.
Boulder, Col.

SWEET CLOVER AS A NOXIOUS-WEED ERADICATOR.

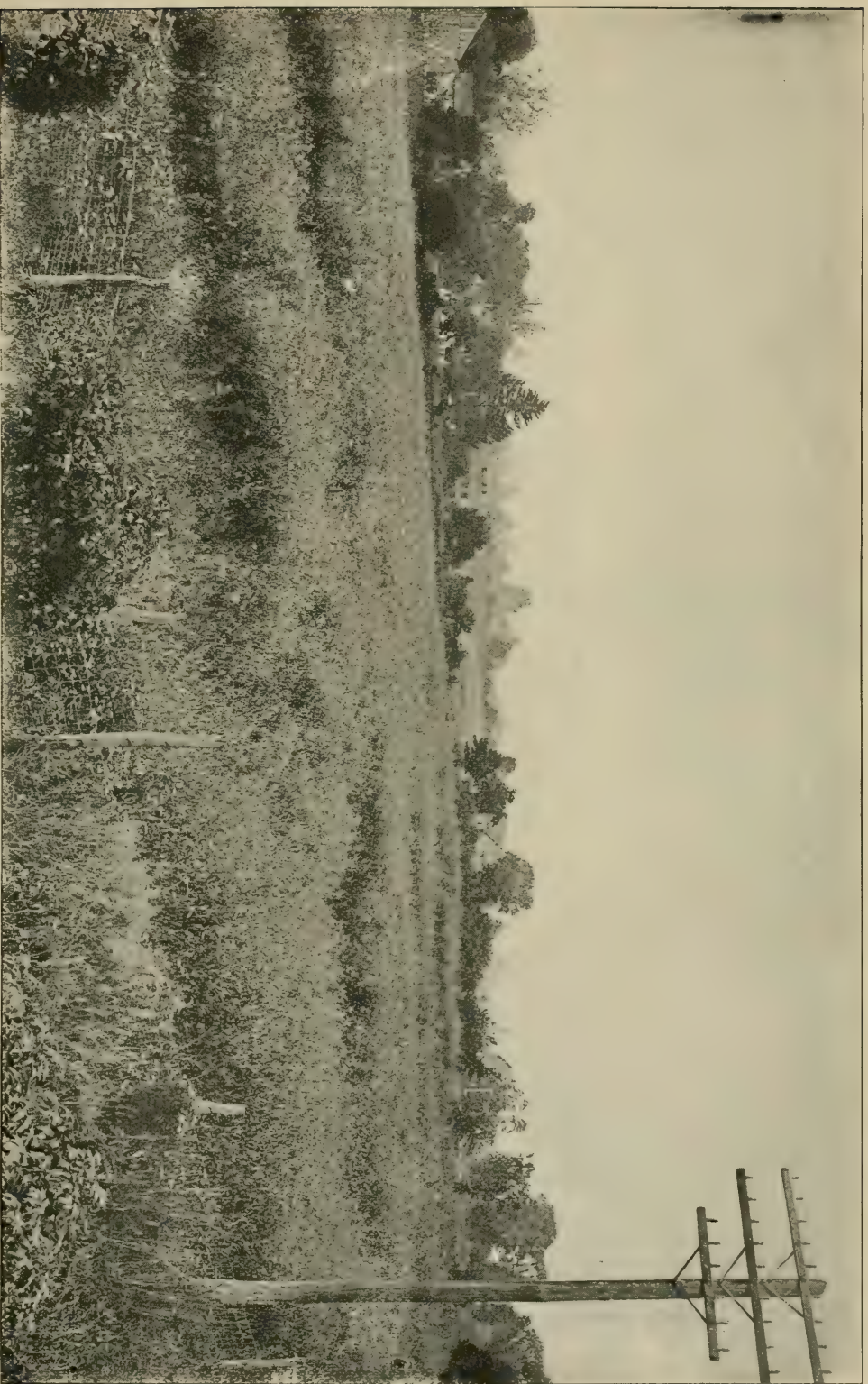
Canada Thistle Choked Out.

BY E. S. HACKER.

Sweet clover is one of the most valuable plants known to the farmer and bee-keeper alike. To the bee-keeper it is valuable as a honey-plant, for it furnishes pasture for the bees for quite a length of time, and yields nectar very abundantly. It is a splendid plant for a white-clover locality, as it prolongs the honey-flow fully two weeks or

Colorado east of the foothills. This is held quite close to the surface by an impervious sub-soil of clay which is as effective as a rubber blanket would be. In most places this water is from 25 to 200 feet down. Where the sub-surface flow is lower than 150 feet it can not be profitably pumped. This sub-surface flow is largely from the irrigation water which sinks down too far for the plant-roots to use, and so is lost unless caught and pumped back to the surface. Electric power is now so reasonable that hundreds of farmers are pumping their under flow back to the surface by means of the electric motor.

There is one more conserving method that has not yet found its way into Colorado enough to speak of, but is sure to come, and that is the carrying of water in closed pipes, saving the seepage and loss from leakage which always occurs in the open ditches. As water becomes higher in price we shall see the adoption of this, just as it is



AN ACRE AND A HALF SOWED TO SWEET CLOVER IN 1906, WHICH HAS BEEN ALLOWED TO RESEED ITSELF EACH YEAR; THE AVERAGE
HEIGHT IS NOW FROM 7 TO 9 FEET,

more. The former blooms first while the latter comes in immediately after the white is through blooming, thus lengthening the flow.

Its value to the farmer as a noxious-weed eradicator deserves mention. During June, 1906, I sowed 10 lbs. of sweet-clover seed on a plot of ground of about an acre and a half, which contained Canada thistles. The plot was not plowed, the seed being sown simply on the sod. In due time the plants appeared and grew luxuriantly in spite of the drouth which overtook it. It has been left standing, and allowed to reseed itself annually, until now it has become an impenetrable mass, having attained a height of from 7 to 9 ft. on an average. This luxuriant growth has almost entirely choked out every Canada thistle and other weeds.

I think bee-keepers and farmers would do well if they would make use of their waste places and fence-rows which are infested with weeds, to sow sweet clover and allow it to reseed itself and choke out the weeds. It might just as well be growing in waste places and fence-rows as weeds, and it would supply the bees with abundant pasture. It might be objected to, and termed a weed; but it is no more a weed than the other clovers; and if it is, it is a very valuable one.

I am satisfied that sweet-clover seed will be in demand in a few years, and the seed-dealers will be compelled to carry it in stock, owing to the increased acreage and its popularity as a valuable plant of many uses to the farmer, stockman, and bee-keeper.

In classing sweet clover I think it takes second place to alfalfa, with the other clovers following.

I would urge every farmer and bee-keeper to sow a trial lot and find out the good as well as the bad qualities. However, in my estimation it has no bad qualities. They are *all* good.

Ephrata, Pa.

HOW TO TELL WHEN HONEY IS TOO THIN TO EXTRACT.

BY CHAS. MITCHELL.

During the season of 1909 we stopped extracting, although our combs were from three-fourths to seven-eighths sealed. We never extract unless the combs are entirely sealed or unless the bees have been idle for at least two days. Of course, if the honey is



MITCHELL'S WAX-PRESS WITH WHICH HE SECURED 66 POUNDS OF WAX FROM 200 COMBS.

from clover, and it is left in the tank two or three days, the thin honey will be on top. When we take off honey if any part of a comb is unsealed, no matter for a space only two inches square, we grip the comb in both hands, and, holding it in a horizontal position, jerk it up and down. If any of the honey flies out we stop extracting at once.

SIXTY-SIX POUNDS OF WAX SECURED FROM TWO HUNDRED COMBS.

Eight years ago I constructed the wax-press shown in the enclosed engraving and secured sixty-six pounds of wax from twenty ten-frame supers, over $3\frac{1}{4}$ pounds per super. This is as much as any one is able to obtain with the very latest improvements up to date.

Molesworth, Ontario, Can.

MOTHS INFEST NEGLECTED COMBS.

BY HERMAN C. SHORT.

The combs shown in the illustration belonged to a farmer who lives near here, and it shows the result of his neglect.

Winchester, Ohio.

[There used to be a number of so-called patented moth-traps on the market, exploited as a sure remedy for moth-infested hives, and many dollars were wasted before bee-keepers learned the simple rule for preventing moths—that of keeping all colonies strong. Most bee-keepers have found, also, that Italians protect their hives much more vigorously than the blacks, and so in later years we no longer hear very much about this enemy that results only from carelessness.—ED.]

HOW QUEEN-CELLS ARE KEPT WARM.

BY M. T. PRITCHARD.

On page 544, Sept. 1, Dr. Miller asks this question: "What possible difference can it make whether a cell is in a cage or out so long as it is in the same temperature? Now, doctor, are you sure that the temperature *is* the same? I am quite sure that it is not, even when the cages are hung between two frames of brood in a strong colony. I am convinced that bees can and do create warmth and transmit it to the brood by bringing their bodies in direct contact with the brood whenever it is necessary; but this is done only when the welfare of the brood requires it.

In our experiment which we carried on in the bee-cellar under the machine-shop a few winters ago, we found that, when the bulb of a thermometer was placed against brood in a colony, it would show a temperature of about 97 degrees; but when placed in a colony which had no brood (even though this colony was the stronger of the two), the temperature would be below 90.

Try this experiment: Take a colony strong enough to fill two hive-bodies. Have brood in the lower body, and honey only in the upper. Examine them during a cold spell, and you will find the bees in the lower body warm and active while those in the upper body will be numb with cold. At one time we tried hatching our virgins in an incubator which was run at about 97 degrees. The cells which were put in the incubator soon after they were sealed hatched promptly on time, and produced large active virgins. Why do the bees build the queen-cells so far out beyond the brood if it is not to enable them to get on all sides of the cell at once?

TIME REQUIRED FOR THE DEVELOPMENT OF A QUEEN.

As to the number of days between the laying of the egg and the emergence of the queen, I think that Cowan is right—that is, if the conditions are the best. During a very heavy honey-flow queen-cells are not built as large or fed as

well as during a light flow, and these underfed cells are slow in hatching.
Medina, Ohio.

PACKING HIVES IN LEAVES FOR WINTER.

BY CHAUNCEY A. GRAVES.

For thirty years my hives have been packed in leaves, summer and winter, there being enough leaves to cover the supers six to eight inches. I run for comb honey. The colonies are in Langstroth hives with six combs to the hive, the remaining space being filled with three wide frames, each one holding 8 one-pound sections. The super on top holds 48 one-pound sections.

As soon as the colonies swarm I remove all queen-cells except one, and seldom have a second swarm. I never use a wooden cover, but place sticks across the frames and put woolen cloth or sacking over them. When the supers are taken off, the leaves are 16 to 18 inches deep. I place boards on top weighted down with stones. The colonies remain in this condition until the supers are put on in May. I seldom lose more



HOW MOTHS RUIN COMBS THAT ARE NOT TAKEN CARE OF.



COMB-HONEY COLONIES KEPT PACKED IN LEAVES THE YEAR ROUND.

than one or two colonies during the winter, and some seasons I do not lose any.

When steady cold weather comes I close the entrances with bran-sacks and shut down the drop-door. I open this again when the thermometer registers 60 degrees, so that the bees can have a cleansing flight. They generally have several before spring comes.

During the first warm days of March or April I feed 25 to 35 pounds of the best granulated sugar, in the proportion of ten pounds of sugar to three quarts of scalding-hot water.

East Whately, Mass.

WHY VIRGINS TEAR HOLES IN QUEEN-CELLS.

Stimulating a Starved Queen with Royal Jelly.

BY O. B. METCALFE.

I do not agree with Dr. Miller, page 578, Sept. 15, that virgin queens have a passion for tearing holes in queen-cells regardless of what may be in the cells. I have had my "noticer" at work on that point, and I have seen very strong evidence that the virgin queen tore those holes Dr. M. referred to, for the definite purpose of getting back in the cell to eat the royal jelly she did not consume while growing, and could not turn around to eat before coming out. Her cell, in most cases, is like the fellow's room that was so small he had to go out in the hall to turn around—even more so, for the little door she cuts as she comes out is so small in many cases that she can barely squeeze out, and often can not get back through it, therefore she must cut a new hole in the side of the cell or enlarge the one through which she emerged. In case she does enlarge the one through which she first came out, she

may still have to cut another hole in the side of the cell, for a bee can not back out wings and legs first through as small a hole as it can crawl in head first. Perhaps some of the holes Dr. M. noticed were cut under these circumstances with a definite aim at getting out.

Many readers, no doubt, think such points of little importance, and not worth studying or writing about. However, I feel that such an attitude is a mistake, and I will take a long chance that any thing I can learn about a honey-bee may be of practical value to me, as well as of interest. It has often turned out so. Take, for example, the point I have just been discussing. I took one of the first newly hatched queen-cells I ever saw, and carefully cut it open to see what it was like inside. I learned that part of the royal jelly was left, and that, down near the end, the cell had a strong tough lining of cocoon, and that up near the base it seemed to be wax only. Later, when I saw a virgin cutting open her old cell in a nursery cage, just as described by Dr. Miller, I might easily have decided that she was doing it for pastime; but I stopped right there, and fell to studying her actions. I thought of the royal jelly that was probably left in the bottom of the cell, and concluded that perhaps she wanted it. Such turned out to be the case; for as soon as she had a hole large enough to allow her head and thorax to enter she settled down to a good meal of the royal jelly, which she nearly cleaned up at that one meal, partially dried as it was. I decided then that perhaps the bees were not feeding her enough, and that, if such were the case, it certainly was a strong argument against the nursery cage. Later in the season I noted that the virgins in the hive sometimes do the same thing where they could at least have honey, all they wanted, and decided that it was not a question of starvation with them, but that they liked it.

I acquired this knowledge without expecting ever to make any practical use of it; but now when I open one of my queen-raising nuclei, in which I have previously placed an unprotected cell to hatch, and find a hole cut in the side of it. I do not close it at once and mark it for a new cell, for I know that the virgin may have hatched and cut the hole in the side later, and the bees for their part may have stuck the little swinging door back; so it does not show that the queen ever cut her own way out. With a penknife it is an easy matter to determine whether or not this is the case. If the cell is solid and tough on the point, no time need be wasted hunting for that virgin. She has been dragged out dead through the side opening; but if the little door opens when you pick at it you can bet that the queen got out all right. So much for knowing the habits of virgins, but that is not all.

One day I opened a hive to see if the bees had released a queen I was giving them in an introducing-cage. They had not released her, and she was nearly dead. I tried to feed her honey on the end of a straw, but she barely tasted it and crept away. She was a fine queen. I hated to lose her, and I did not lose her. I bethought me that the young queens liked royal jelly better than honey, and decided to try it on her as a stimulative food. It worked like magic. No sooner had I offered it to her than she began to lick it up eagerly. She ate a quantity equal in size to half a grain of wheat, and in half an hour she was quite lively. I then introduced her successfully to another colony. Afterward I tried the plan again with some success. If you have a fine queen arrive half dead in the mail, try it.

DOES THE FIRST HATCHED TEAR DOWN THE OTHER CELLS?

One more thing about queens cutting open queen-cells. On page 479 Mr. Holtermann raises the question as to whether or not the first virgin ever cuts open the other cells from which a rival queen might come. I have seen just one case where the evidence would convict the virgin queen beyond a doubt. One boiling-hot day this summer a young man by the name of Wayne, who has worked for us this season, sat with me for three-quarters of an hour right out in the sun while our dinner was waiting for us three miles away, and watched a virgin cut open a queen-cell from the beginning to the point where she could get her head in to bite the young queen. The workers stood around and took no part whatever. I had heard that the virgin cut a hole in the cell and stung the young queen. This one made no attempt to sting the victim, but she went after her with her jaws as hard as ever she could.

Mesilla Park, N. M.

WHAT SHOULD BE THE PRICE OF HONEY?

The Cost of Production Should Not be Taken into Consideration.

BY OREL L. HERSHISER.

Under the caption of "What is the Cost of Honey to the Producer?" the subject of "What should be the Price of Honey?" is also discussed by Mr. F. L. Pollock, page 552, Sept. 1.

Mr. Pollock certainly makes some startling statements, and expresses himself as being satisfied, as appears from his discussion, with a wholesale price of from 5 cts. per pound for dark honey to 7 to 9½ cts. for light, depending on the extent of the crop, and as to whether there is a fall flow, the fixing of such price being determined solely by adding 20 per cent to the value of the investment, including interest on capital, owner's labor, maintenance of horse, and miscellaneous, and dividing the total by the number of pounds of honey produced.

Mr. Pollock seems doubtful of the wisdom of the publication of his doctrines, and well he might be if there were any likelihood or possibility of their adoption. Fortunately such a scheme of making the price of honey is impossible of accomplishing in a general way. It is at once apparent that each individual bee-keeper would have a price of his own as the result of the computation. The labor account of different bee-keepers would not always agree, for some operators will accomplish more in a given time than others. The capital invested per colony varies with different bee-keepers, and some have more expense in keeping up a horse than others. Some have to hire horses. Moreover, the keep of the horse varies in different years according to the price of feed.

Suppose an apiary of from 75 to 100 colonies. The equipment for running the smaller number of bees is certainly nearly as great an expense as for running 200 colonies, for nearly every item of expense in the one outfit will be found in the other—the difference of a little larger and more complete equipment for the larger number being inconsequential, and not at all in proportion to the greater number. On the other hand, the apiarist with from 350 to 400 colonies will have an expense account but slightly larger for his greater number of colonies than the man with 200. It will certainly require a greater number of hours in labor per colony for the season, to operate a small than it does for a large number; and if the bees are in out-apiaries the time required in going and coming would be the same in one case as in the other. An examination of a few colonies in an apiary is frequently all that is required to give an idea as to the condition of all the others; but such examination requires as much time to show the condition of an apiary of 100 colonies as for one of 200. So it is plainly apparent that the expense per colony is greater for the smaller number. Mr. Pol-

My boy is in the bee business here. Two years ago his bees averaged over 100 lbs. to the colony. He moved most of them where fireweed was plentiful. Last year they did not do so well.

Gate, Wash., May 27.

J. S. BLAIR.

lock values time at 40 cts. per hour; but there would certainly be a difference of opinion among bee-keepers on this point. I hired a tinsmith to do a job, and he charged me 50 cts. per hour, and extra for materials, such as solder and rivets. The same is true of my blacksmith. A plumber did a small job for me, and his time account was 60 cts. per hour and extra for materials. Where artesans get 40 cts. per hour a bee-keeper's time ought to be worth at least that much, for expert bee-keepers are surely as much trained specialists as are artesans. I for one consider my time and skill as equal or superior to that of my plumber, and superior to my tinsmith and blacksmith.

According to Mr. Pollock's method of ascertaining the legitimate price of honey, John Smith (merely one of the numerous individuals of that name) with 400 colonies of bees would be selling his honey at a price considerably lower than Sam Jones with but 100 colonies; and the Tom, Dick, and Harry bee-keepers more or less numerous in every honey-producing locality would certainly present a valuation on their time that would vary according to their number.

The Pollock method of fixing the price of his honey is novel as well as demoralizing if adoption were attempted. Did you ever hear of the price of wheat, hogs, or potatoes being ascertained in any similar manner? Such a method would require a different price for not only every bee-keeper but for every producer of commodities.

There is just one law by which the legitimate price is fixed—i. e., the law of supply and demand. If you have high prices, one of two things has happened: either the supply has in some manner been curtailed or the demand in some manner increased; and, conversely, if low prices prevail, either the supply is abundant or the demand has in some manner been curtailed.

The law of supply and demand is subject to various influences which enable those familiar with its application to make an unjust use of it. The unscrupulous honey-merchant will tell the bee-keeper that there is a bumper crop of honey, notwithstanding reliable advices of crop committees and editors who have taken particular pains to ascertain the facts. On the one hand they will, in extremely confidential mien, state the offerings at nominal prices as being in great number and volume when communicating with sources of supply, and on the other hand inquire with feverish excitement of those supposed to be able to give reliable information where they can get honey to fill orders. Some will split hairs over quality, and resort to tricks to try to show up honey to the poorest advantage when purchasing. But notwithstanding the outside influences on supply and demand, the law still holds good; and if the merchant can fool the bee-keeper he does so at his own profit and sells at the highest price at which he can dispose of his holdings, regardless of what his stock cost.

Demand may be increased by finding new

markets, and by stimulating the trade you already have to take more of your goods. Whatever price you are able to obtain for your honey is legitimate. No fear need be entertained of getting *more* than it is worth. Cost of production has nothing to do with the matter, except that doing business at a loss will put the bee-keeper out of business sooner or later, which would decrease supply and cause a rise in price. If cost of production were to be considered, *a la* Pollock, in the seasons of 1906 and 1907 I should have had 40 cts. per pound for a poor quality of extracted honey. But, unfortunately for me, I could not get it, because some other bee-men not far distant produced good crops which could be sold at a fair profit at less than one-third that price. Because other bee-keepers had good crops I was obliged to operate my apiaries at a loss those seasons, and sell at such advance over ruling prices as, by persistent effort, with my light crop as an argument, I was able to obtain.

If there is a shortage in the honey crop, and high prices are, in consequence, obtainable, I, in common with most other bee-keepers, freely avail myself of them, even though I am so fortunate as to have a large crop. And why not? Perhaps soon there will be another season when the tables will be turned, and others will have the paying crop, and for my season's work I may be scantily compensated.

Conditions generally are such that scarcely any thing a bee-keeper uses may be mentioned that has not advanced in price; and the justice of higher prices for honey is so apparent that "those who run may read." When all bee supplies are high, and higher prices threatening, as well as bread and meat, and all food products, why not honey? If the dairyman who flows the land with milk can not prosper, except by 8 to 10 cts. per quart, and 35 to 40 cts. per pound for butter, as compared with about two-thirds those prices not many years ago, it seems evident that the apiarist who flows it with honey can not prosper accordingly without a corresponding rise in the market value of his own product. These fairest fruits of rural husbandry being mentioned together in Holy Writ, to indicate the richness of the Promised Land, were undoubtedly considered of equal importance, and there is no indication that their food values have changed, but it is apparent to every observer that their corresponding market values have gotten out of all equitable proportion.

Mr. Pollock's discussion has brought out prominently one fact of great importance; and that is, that honey-producers with 200 colonies or thereabout are producing honey at insufficient profit in the average season if they sell their honey at less than 9½ cts. per pound wholesale. As shown above, the profit is less for smaller apiaries. An examination of the figures submitted will show that those who sell their honey at 7½ cts. per pound are getting absolutely no

profit out of the business. *Bee-keepers who sell best extracted honey at 7½ cts. or less, take notice.* Of course, this is on the assumption of 50 lbs. per colony in the average season, and I think that hits the most of us. The specialist depending on the profits of bee-keeping to a great extent can stand no shrinking of that 20 per cent net profit. There are too many little shoes to buy. Prosperity in apiculture means that we must have more than 20 per cent net profit, which means higher prices for honey to the producer.

Kenmore, N. Y.

[We do not understand from Mr. Pollock's article that he would reduce his selling price if he found he could produce at a lower cost, nor that he would base the selling price merely on the cost of production. As we look at the question, he was only making an effort to show that, under those circumstances, the two-hundred-colony man is probably making a safe profit on his investment.—ED.]

THAT HONEY-HOUSE OF MINE.

BY LOUIS H. SCHOLL.

One of the first essentials in up-to-date bee-keeping is a convenient and substantial honey-house and work-shop. It is the very next necessity after the bees and supplies are secured, no matter whether for one or more apiaries. A well-kept and conveniently arranged work-shop should be the pride of every bee-keeper. Here the ever ready tools, each with its place and ever in its

place, make his work much more enjoyable. The honey-house, for economy and convenience, should be under the same roof, but at the same time it is preferable to have the two parts separated from each other. To combine the two into one, and use both for a work-shop or a honey-room, is most disagreeable indeed. This is too often done, not only by such bee-keepers as can not afford a better arrangement, but by many who are able to have up-to-date conveniences.

How many bee-keepers have a really suitable place in which to do their work in the best possible manner? The majority of the work-shops that we have seen have been in some crowded place, made more crowded because of the fact that nothing had a definite place, every thing being thrown around the room, so that care had to be taken in getting about. The same is true with most of the honey-houses, many of them being the most miserable makeshifts, in small close places without ventilation—regular sweat-boxes where the work was every thing but agreeable. We have had these experiences at various times in the past, but it did not take us long to study over the problem, with the result that we constructed a building that answers its purpose so well that we have decided to tell others about it, as so far it is proven to be the best that has ever come to our knowledge.

Fig. 1 shows our building, which is both honey-house and work-shop. It is 24 ft. long, 14 wide, and 18 high. The view-point is from the south, so that the long side with the large shutters is to the southwest. These provide shade during the entire day, which shade, in connection with the cool south

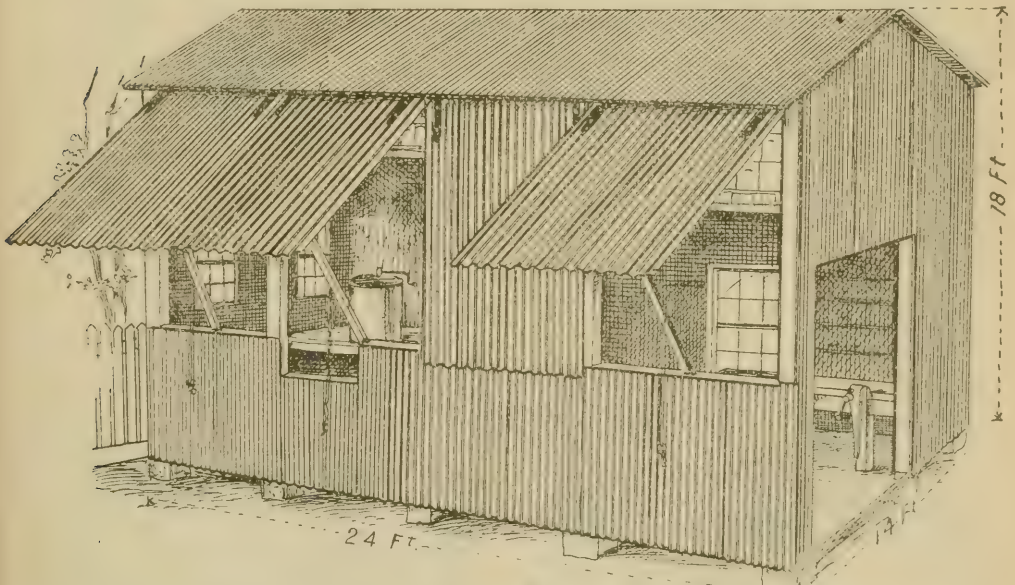


FIG. 1.—SCHOLL'S HONEY-HOUSE AND WORK-SHOP; EVERLASTING, FIREPROOF, AND YET COOL IN THE HOTTEST WEATHER.

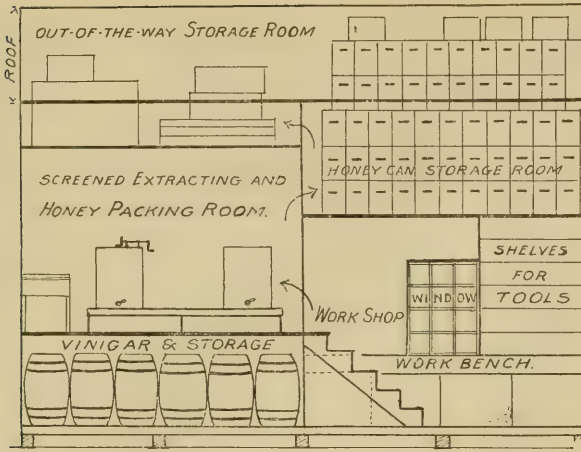


FIG. 2.—CROSS-SECTION OF SCHOLL' HONEY-HOUSE AND WORK-SHOP, SHOWING THE FOUR FLOORS.

breeze which enters the building through the large shop-door, 7×9 ft., and the opening the entire length of the building under the shutters, 8×24 ft., makes the room a cool place to work in, especially as there are two additional large windows on the rear wall.

Figs. 1 and 2 show the general arrangement of the building, the different floors, and the purpose of each floor. The reason that the honey-room is elevated is that it enables loading in the supers of honey without any high lifting as they are taken right from the wagon. This is also true when loading the wagon with cases of packed honey, the floor being just a little higher than the top of our special wagon. In this way we have very little real lifting to do, even at the depot, where we drive right up to the platform. This feature is a great convenience, especially where there is a large crop of honey to handle. We haul all of the honey to this house in the supers, and then ship it out in cases weighing from 120 to 140 lbs.

Fig. 2 shows the honey-room with the storage-room below and another above it,

the other half of the building being taken up by the workshop with an upper story for holding our honey-cans. From the shop, steps lead through a door in the screened partition or middle wall, shown by the first arrow. From the honey-room we can get to the storage floor for the honey-cans so that the cans are always in ready for use. Also from this upper floor it is easy to get to the out-of-the-way storage-room where we keep material that we do not need immediately.

Figs. 3 and 4 show how the large shutters are made. These are so arranged that any one of them can be opened at will whenever more light or ventilation is desired. They are supported at the top by strong iron hinges, and operated by the folding supporting-arms, original with us. These work al-

most automatically, as a little push on the extended arm from beneath closes the shutter immediately, and a firm hold of the rope with the other hand prevents the shutter from slamming against the wall. To open them it is necessary only to push the lower end of the shutter away from the wall slightly, then pull on the rope. The arms, being extended full length, remain in this position without being fastened in any way.

The shutters are of light construction, being only frames covered with sheets of corrugated iron. Although light they are heavy enough to stand even the hardest wind.

The only parts of the building that are screened are the front side of the honey-room from the rear end of the building to the middle, where in Fig. 1 the shutter comes down. This inside partition wall is screened, but only from the honey-room floor to the under side of the can-storage-room above. This leaves the vinegar and storage-room below, open from the work-shop, and the can-storage-room open from the honey-room. The front side under the shutters of the can-storage-room is also screened. All of this, together with the two screened windows at the rear, keeps the bees out of the honey-room entirely. The work-shop and storage-room next to it under the

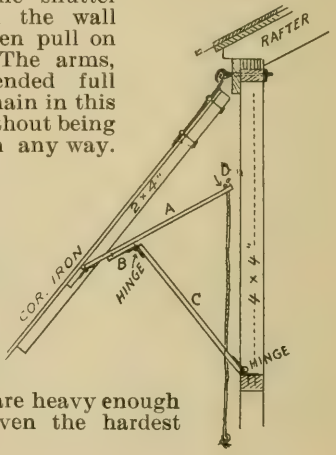


FIG. 3.

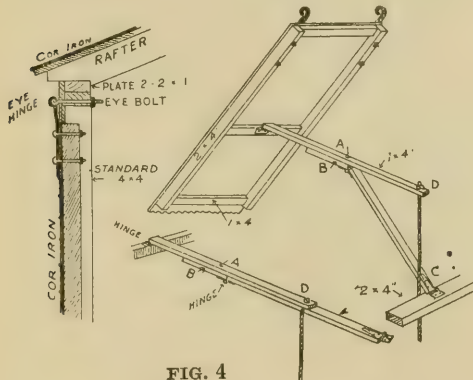


FIG. 4

honey-room are entirely open, no screen being needed.

The whole building is cheaply constructed. All the lumber used is what is known as No. 2, which can be bought at a much lower price than first class. The whole thing is covered with corrugated galvanized-iron roofing, making the roof and walls durable and fire-proof.

New Braunfels, Texas.

CONDITIONS IN CUBA.

Conditions Brighter than for Some Time.

BY FRANK REIMAN.

The prospects for a large crop of honey are fine in this part of Cuba. We have had abundant rains without any excess, as in other years. The Cauto River never rose a foot above high tide. It usually rises from 40 to 50 feet at Cauto in ordinary years, in May or June, and again in September or October, which are the cyclone months. Here we still have plenty of woods which, I think, are the source of the rainfalls. In Manzanilla it sometimes does not rain at all in the summer time, although it borders on the sea, because there are no woods nearer than about 20 miles. The indications are that in fifty years most of the island of Cuba will be barren if the destruction of woods keeps on, which it will unless the United States government takes hold of things here and does better than it did under Magoon's administration of Cuba. It must be remembered that there is no rainfall between October and May; and when the woods are cut off there is very little rain in the summer, when it is absolutely necessary, on account of the scorching heat from a vertical sun and the thermometer at 90°.

The spring honey crop begins with the first rains in March or April, and lasts till June or July. In case there are no rains in June or July then there are bad times for the bees. The first very dry summer I experienced in Cuba I lost 500 hives. Last summer was very dry; and after feeding \$200 worth of sugar I still lost 400 hives, having only 550 left, and mostly in poor condition. This year we had plenty of rains at the proper time, and the bees actually increased from 1050 to 1100 hives after the close of the spring honey crop. All the hives are full of brood, and in good shape to begin on the fall crop, which begins Sept. 1, and lasts to Oct. 15, after which we have our winter crop of bellflower or white morning-glory.

I started March 1 with three yards, containing in all 550 hives. I started two new yards and increased to 1100 hives. The bees will probably increase to 1300 by Nov. 1. Last year I had natural swarms in November, which made their full share of honey. My spring crop was 70 barrels, mostly dark honey. My fall crop, which will be all dark, will be about 25 barrels; and the winter

crop, which will be pure white, will be over 100 barrels. Our barrels hold 50 gallons each, or about 600 lbs. My wax crop will be about 4000 lbs. this year. I have all five yards along the Cauto River, the yards about a mile apart, and the furthest is only three miles from the home yard.

In seven years I have known only three days when the bees could not work in Cuba. On Jan. 24, 1904, the thermometer was 34° in the morning, and never reached 55 all day, with no sunshine at all. In the same year, May 15, we had heavy rains all day, being a cyclone storm. On Oct. 18, 1908, we had another cyclone storm which demolished the bee-house and drowned several colonies. In the rainy season the showers fall, usually, between 2 and 5 in the afternoon, never in the morning and very seldom at night; but cyclone storms rain day and night. However, the winters in Cuba are very fine. The thermometer hardly ever goes as low as 55, and never above 80. For this reason Cuba is a very popular winter resort.

Cauto, Cuba.

THE BEST HONEY-COMBS ONLY FROM NEW COMBS.

BY T. P. ROBINSON.

Seeing an article in GLEANINGS for Aug. 1, setting forth the importance of using only virgin or newly made combs for the production of the best grade of extracted honey, and by the request of the editor to hear from others on the subject, I have been persuaded to give my own experience, which is an absolute conclusion in my case or so far as I am concerned.

Mr. Leon C. Wheeler, page 482, Aug. 1, in his contention that the best grade of extracted honey is taken only from virgin or new combs, is correct. There is not a comb, that has once contained brood, that will produce quite so white or quite so mild a honey in flavor as a new comb. I have noticed that even white combs one or more years old that have never contained brood do not produce quite so good a grade of extracted honey as the new combs. The difference is very slight but noticeable.

Honey from combs that have contained brood is darker and stronger, even when produced in the same hive, filled by the same bees, and gathered from the same flowers. The difference is not so great in my case when producing a lower grade of honey; but when I have a special order for the very best I select the white or new combs from which to take the honey.

Fortunately I am located in a country where the honey is very uniform, both as to color, flavor, and body; and honey taken from the brood-combs goes as a first-grade article. I never have to discount on account of having brood-comb honey. This has been my observation for the last ten years. Bartlett, Tex.

Heads of Grain

from Different Fields

Uniting a Bee-tree Colony with a Weak Colony in a Hive.

A few days ago I learned that some log-cutters about a week before had cut a bee-tree. When I reached the place I found that all the combs and honey had been taken. I placed a box above the hole in the log, removed what little comb there was left, and placed it in the box. Then with my hands I took out all the bees which I could get and put them in the box. I then cut a hole above the place where the bees were, blew some smoke in, and the way the bees came out and went into that box was certainly amusing. I wrapped the box up in a sheet and carried it home.

To unite these bees from the tree with another weak colony that I had, I poured half a teaspoonful of peppermint into half a gallon of water and sprinkled both lots of bees, making them pretty wet. I then bumped the bees from the tree on to the frames, and with a soft brush got them all down into the hive. I expected to see them fight, and watched them for about an hour, but could see nothing of the kind. To-day this colony is the very strongest one I have. It is doing finely in every way. The peppermint gives all the same odor, so that they do not know one from the other.

The queen ought to be removed when the uniting is done.

Columbia City, Ind.

FRANK LANGHOR.

[The only trouble when two lots of bees are united is that the scent is different, and there is danger of the bees fighting. Usually, gentle bees like Italians or Carniolans can be united without any trouble. We do not attach very much importance to peppermint water. There is no harm in using it if one cares to. Smoke is much more convenient; and where it is necessary to give two lots of bees the same scent we would put a little tobacco in the smoker.]

If there is any danger of the bees fighting before uniting, trouble can usually be averted by shaking both lots of bees out in front of the entrance of the permanent hive they are to occupy. Shake one frame from one hive and then one frame from another, and so on. This very act of shaking and disturbing will have a strong tendency to cause the bees that are moved to stay in their new location like a natural swarm; in fact, we would usually recommend uniting in this way, especially if it be in the fall.—ED.]

Bees Kept in a Cellar Adjoining a Furnace.

December 23, 1909, I placed 31 colonies of bees in my cellar, and took them out last spring, on March 23, without the loss of a single colony. In May I looked them over carefully, and found every thing in excellent condition, which I think speaks well considering our cold Wisconsin weather. I have been experimenting for several years on the problem of wintering indoors, and I believe I have an ideal cellar. I can furnish plenty of fresh air, and I also have a small pipe that runs through the cellar from the furnace, which I use in cases of extremely cold weather. The bee-room, being adjacent to the furnace-room, makes the air very dry, which I consider absolutely necessary.

Through the winter I leave the extracting supers on the hives, but place them under the brood-chambers rather than on top, for the bees prefer the upper story where it is warm, and they are never disturbed or made uneasy, as they are so far from the entrance. I use a cushion for each hive, 3½ inches deep, and filled with basswood planer-shavings. This cushion is so constructed that there is a half-inch space above the top-bars. A piece of ordinary wire cloth is used first, and then a piece of burlap above it to keep the shavings from rattling down on the combs, the purpose of the wire cloth being to keep the bees from gnawing the burlap. I use slats over the shavings. In the spring I also use this cushion to keep the brood from chilling, and find it a great protection.

Hartford, Wis.

F. R. BUCHANAN.

Seventy Colonies Diseased with Paralysis.

I have read carefully about bee paralysis, and find my bees have all the symptoms of it. I have about 70 colonies, and nearly all have the disease. Some are bad, though none have died out entirely so far. The entire apiary is beginning to smell pretty bad. The honey-flow is practically over, and robbers are ready to make trouble. I haven't enough healthy stocks to take care of the brood from the diseased ones, nor to form nuclei to build them up with. Shall I sprinkle sulphur on the brood-combs and all until the disease is killed out, then unite two or three stocks, or put them on to super combs? I have plenty of them with lots of honey in them. Or is there a better way to treat them at this season of the year? What would you advise me to do? One bee-man advises me to let them alone till next spring; but I am afraid too many will die off.

Salinas, Cal.

W. O. KIRKPATRICK.

[The nucleus plan for treating colonies diseased with bee-paralysis is to be preferred; but if you have not enough healthy colonies with which to form nuclei, perhaps the only thing you can do is to use the sulphur plan. Requeening with vigorous stock sometimes effects a cure. After the sulphur plan is carried out you would undoubtedly have to do some uniting.—ED.]

Heating Wires by Electricity for Imbedding Comb Foundation.

In heating the wire in a frame for imbedding it in foundation, what is the best voltage to use for heating all the four wires at once? I want to get a small transformer to do this work, and should greatly appreciate this information. What would be the flow of current (amperage)?

Clinton, Ia., Sept. 5.

C. S. FRITSCHER.

[This was referred to our electrical engineer, Mr. Eckart, who replies:]

It requires four amperes of eight volts to heat the four wires of a brood-frame for imbedding foundation. In case you heat only one wire at a time, it will require two volts. It is necessary, of course, to have all connections good, so that there will be no drop in voltage in any of them. We note that you are about to buy a transformer for this purpose, and will offer the suggestion that you use your lamp circuit, using a bank of lamps for resistance. If the voltage is 110 you could use a bank of eight 16-candle-power lamps or four 32-candle powers. We believe this would be much cheaper than the purchasing of a transformer, since the time that the current is in use is very short, and would amount to but very little, even at the highest commercial rate.—B. E. E.

Blacks Store from the Sugar-cane while the Italians do Not.

Our main honey-flow and sugar-making are coincident in this island, so that bees have no reason for frequenting boiling-houses, and they do not. But in this locality there is an estate close by that begins cane-grinding months before the usual season. Because of the large number of wild blacks in this neighborhood I had decided to give over trying to keep my stock pure, but changed my mind suddenly this week, for I have been taking off my crop of honey, and I find that my Italians have stored beautiful honey while the greater part of what I have taken from the blacks and hybrids is cane syrup.

This circumstance adds proof to a claim that is made, namely, that Italians, only under famine pressure, will store product from raw sugar. I observed this peculiarity years ago when I fed with raw sugar, and found that blacks and hybrids came to it, but not Italians. To secure honey in this locality, with sugar-making going on out of the regular season, I must have Italians.

W. G. HUTCHINSON.

St. Joseph's Rectory, Barbados, W. I., Aug. 26.

A Case of Propolis-poisoning.

In the spring my hands, arms, and face became poisoned. Supposing it to be from ivy or some similar source I applied salt and soda and water; but this did not have much effect in curing it. Then I contracted an additional dose of the poisoning after handling the supers and cleaning out the house, and this convinced me that it came from

something about the bees—undoubtedly the propolis. My eyes swelled almost shut. I went to a physician. He did not give me much encouragement nor any help. I painted myself with iodine, which killed the poison but left the skin very sore. I was poisoned again; went to another physician, who fixed me some salve and gave some carbolic acid, with instructions to use it in a weak wash. I applied these with salt and soda, and killed the poison, but my skin was almost raw. I noticed that the carbolic acid had a soothing effect. Continuing to get poisoned I talked with a bee-man about it, who advised the use of red precipitate (very poisonous). I used this and the poison was killed, but that, too, left my skin sore. I began applying the carbolic wash, increasing its strength until I used a teaspoonful of carbolic acid to about a teacupful of water. This wash stopped the burning and itching, killed the poison, and at the same time left the skin in normal condition. I am using the wash exclusively. My hands, wrists, and face have become immune to the poison; but other parts of my body are susceptible to it, the poison going through my clothing.

C. R. PARKER.

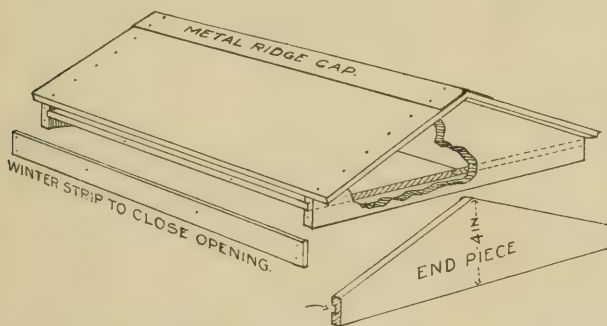
Plateau City, Colorado, July 23, 1910.

[We have had active editorial charge of this journal for twenty-five years this coming December. For nearly ten years prior to that time we had been, more or less, in close touch with its pages. During the whole period of nearly thirty-five years we do not remember reading of any other case where poison of the kind mentioned was traced to propolis. Even in this case we are inclined to believe that the cause is due to something else. However, let the truth come out. If any of our readers have ever experienced a like trouble, we should be glad to have them report. In the case mentioned it would be possible for the propolis to be gathered from some poisonous plant or tree, and just possible, also, that you might be very susceptible to the action of that poison, whatever it might be.—ED.]

A Gable Cover Protected by Paper.

An important part of a good hive is a cover that will be cool in summer and warm in winter. Of course, if one winters indoors it does not make so much difference. But most of the bee-keepers around here winter outdoors and take but little care of their bees at that.

I like the flat paper-top cover quite well, and always order it, but prefer a cover made like the one shown herewith. I have used several that I made



myself, and like them better than any other cover for a single-walled hive. The inside (flat) part can be made either of two or three pieces. The outside (top) should be of two pieces if the ridge is narrow, but can be made of four pieces if the whole top is covered with paper. The outside should project over the ends 2 in., or $\frac{1}{2}$ in. at least, and fastened with several small nails. If the whole top is covered with paper there will never be any trouble from the ends of the boards splitting. I have had no trouble from this cause. A strip of sheet metal can be used for the ridge-cap, or roofing-paper will do if nailed with tacks.

Mystic, Ct.

ELMER E. WAITE.

[The design of your cover is excellent if it be covered with paper or metal; but such a scheme of making a cover when only plain boards are used will not work. The gable boards will check or

split at the nails. This is due to expansion and contraction, as the result of varying conditions of weather.—ED.]

Catching Chickens that Roost in the Trees; Flying-machines, etc.

Mr. Root:—You spoke of the difficulty of getting chickens out of the trees in Florida. I have used a very convenient device. Mr. McClave uses it a great deal. Take a piece of wire, one or two feet long. Insert it in a cane fish-pole. Bend the wire as here shown, and then you can catch your chickens very easily, even if they do roost twenty feet or more

above the ground. Try it.

In speaking of the Wright brothers using spruce timber in their machines, I think that willow is the strongest and lightest wood we have. I have used a good deal of it for things that require very little weight but a good deal of strength. I have used it for ladders ten to fifteen feet long.

Now one thing more. I have said to my friends that I hoped Mr. Root would not risk his neck by going up in one of those machines. This world is not ready to spare him yet.

We expect to start south this season about Nov. 1. We will locate for a time, at least, at St. Petersburg.

New London, O., Sept. 23.

W. C. GAULT.

Another Plan for Introducing a Queen to a Laying-worker Colony.

I am a beginner with bees, and I have been troubled with laying workers. I have only one hive, and so I was precluded from getting rid of the laying workers by the method recommended in the A B C, i. e., scattering the bees round in other hives. While in this quandary I saw the plan suggested by Mr. Hartl, page 534, August 15, Mr. E. S. Hopkins, of Jeffersonville, Ind., who is helping me in getting started with bees, suggested a modification of that plan, and with the said modification, the plan worked to perfection. We took an empty hive and put in it two frames with comb foundation. Between the two we put the queen in the introducing-cage as she came to us through the mail. We put this hive on the stand of the old one which had the bees in it, and then put the old hive on top of the new, the two being separated by a heavy mat and a wire screen. We made an entrance to the old hive in the back, and over it put a bee-escape. We then left the hives alone for five days, when we again opened them. Practically all the bees were down in the new hive. They had accepted the new queen, which had started laying. We then transferred the frames of brood from the old hive to the new one, and since then every thing has been going all right. I am feeding the bees now to get them in good condition for wintering. I write this to you as a suggestion for some one else who may be in as bad a fix as I was, and as an endorsement of the plan of the gentleman from Texas. RICHARD P. DIETZMAN, Louisville, Ky., Sept. 17.

Common Law as Affecting Swarms Found on the Property of Another.

We have found a colony of bees in a small telegraph-pole along our own land. Can you inform me as to my right?

Mt. Carmel, Ct.

OWEN NOLAN.

[Under the common law the bees are the property of the one who discovers them; but such person can not go upon the property of another without the consent of the owner. From a legal point of view you would have to obtain the consent of the telegraph company; but for ordinary purposes we think it would be perfectly proper for you to climb the pole and take the bees without asking any odds of any one. Surely a great telegraph company would have no objections to your going upon its premises and up on its pole and removing some-

thing that is of no value to it, and possibly might prove an annoyance.—ED.]

When to Prepare Bees for Winter.

In July a swarm came off, the bees of which have been doing well so far as honey in the brood-frames is concerned; but they have done nothing in the super, which I put on the first week in September, although we have had a good honey-flow from buckwheat and goldenrod.

Why do the bees cluster out in large bunches on the front of the hive late in the evening? At this time of the year it is wet and damp, though not very cold.

What time in Northern Pennsylvania is it advisable to place the colonies in winter quarters?

What hive do you consider best for outdoor wintering in this part of the country?

Wheelerstown, Pa. MRS. SUSAN E. ALLEN.
[It is hard to state why your bees did not work in the super; but it may be that the swarm was not a very large one, and that it took most of the flow for the bees to build up in good shape. However, your bees got started to storing in the brood-combs; and when there is still room in the lower part of the hive it is difficult to get them to store the honey in the super, as they prefer to keep it near the brood.]

Clustering out as late as this is rather unusual, and indicates a lack of ventilation when all the bees are in the hive, as in the evening. A larger entrance would probably be better for such a large colony.

It is best to begin early to get the bees in shape for winter; and any time after you can be sure that there are enough stores in the hives, the packing can be done. It is often unsafe to pay no more attention to a colony after an examination early in the fall, for the reason that brood-rearing may start up again later in the warm weather that generally comes, so that the stores are partly used up. For this reason it is not best to pack single-walled hives so that no further examination can be made, until after this period.

We believe that the ten-frame chaff hive gives the most uniform results for outdoor wintering in most localities.—ED.]

\$700 Profit from a Back City Lot.

Last year the bees in this locality did little or nothing, many people getting scarcely enough to winter their bees; but this season has been very good, with the exception of winter losses. A great many apiarists lost a very large part of their bees. One very scientific man, to my knowledge, went to winter with 80 colonies, and came out in the spring with but 7, having wintered on summer stands. I had very good success with mine, wintering in the cellar and not losing a single colony, but paid for my experience two years ago, having put 32 colonies in the cellar and coming out with 8. I started this season with 32 colonies, some of them rather weak early in the spring. March was an exceptionally fine month here, however, and I built them up very rapidly. I succeeded in harvesting 30 cases of fine comb honey and 320 gallons of extracted. I sold all my comb honey at \$4.00 a case, and have sold half of my extracted honey at \$2.00 a gallon. I am confident of a net profit of \$700 from 50 ft. square in the back of my lot.

Omaha, Neb.

H. C. COOK.

A Sour Smell Coming from the Hives.

I am puzzled by a peculiar odor from my hives, which is so sour that one can detect it several feet away. All of the colonies seem to be affected alike. This odor has developed only in the last two weeks. I have examined very closely, but can find no dead brood. The queens are laying some, and the hives are full of honey. I got a surplus of from 40 to 88 lbs. of fine white comb honey from the hives. This would seem to indicate that the bees were free from disease during the honey-flow, which ceased about August 20.

Wilkinsburg, Pa., Sept. 26.

F. D. MILLER.

[If you make investigation you will undoubtedly find that the sour smell comes from some fermented honey in the combs. Your bees have probably been bringing in something, perhaps not nectar from the flowers, which soured quickly, owing, possibly, to its nature, or to peculiar weather conditions at the time. It would probably be best to extract all the honey in the combs, and substitute su-

gar syrup. It may be that only a small part of the honey is soured, and that the rest is all right; but only an examination would reveal whether this is true. Since there is no dead brood at all in your hives, it is unlikely that the sour odor is due to any disease.—ED.]

Sealed Covers versus Oil-cloth Quilts.

When I prepare my colonies for winter I intend to put a super-cover on the single-walled hive, with a superful of chaff over it, and then tie burlap around the hive and finally push a box or winter case down over the whole thing. Do you think oil-cloth over the frames would be better than the super-cover?

How much sweet-clover seed should be sown to the acre?

Mineral Ridge, O.

JOHN WAGGONER.

[If you use oil-cloth over the frames you should use a few sticks laid crosswise of the top-bars under it so that there will be a bee-space above the frames. The oil-cloth is not porous, so that the results would probably be about the same as with the use of the super-cover.]

Different amounts of sweet-clover seed are sown to the acre. Notice that Mr. E. S. Hacker, page 658, this issue, sowed only 10 lbs. of the seed on a plot of ground comprising about an acre and a half. However, R. L. Snodgrass, Augusta, Kan., advises not less than 20 lbs. of the unhulled, or 12 to 15 lbs. of the hulled to the acre. For further particulars see "The Truth about Sweet Clover."—ED.]

A Hive-cover that will Not Crack nor Check.

I use a single board as wide as the hive, and 1 1/4 inches longer. On both the upper and under side of each end I place two cleats as wide as the board, and 7/8 inch square, driving one nail in the center through the upper cleat, down into the cover, and also the lower cleat. To the ends of these cleats I nail a piece of galvanized iron, 7/8 inch wide and 2 3/4 inches long, using three five-penny nails—one in each cleat and one in the cover, the latter nail keeping the cleats in the proper position. This cover will never crack with the sun if it is well painted; for, as the board shrinks, the nails on the sides allow it to give.

Los Angeles, Cal.

T. ARCHIBALD.

[In your State you would not have much difficulty in getting lumber wide enough for the hives; but in most localities one-piece covers are too expensive, owing to the high price of such wide lumber.—ED.]

Questions about Auto Buggies.

I have noticed pictures of autos and auto buggies in GLEANINGS. I want to ask you if you know how high are an auto buggy's wheels. Does the Auto Buggy Co., of Norwalk, O., have any catalog?

Java, N. Y., Aug. 15.

D. M. BUCK.

[The high-wheel buggy type of automobile has wheels about 42 inches high. Some machines have them as high as or higher than those on common buggies; but the usual tendency is to have them a little lower. The Auto Bug Co., of Norwalk, O., issues a regular catalog, as does the International Harvester Co., of Akron, O. Both of these concerns make a specialty of buggy type of machines that are especially fitted for going over rough roads and in deep mud.—ED.]

Requeening would Cure the Disease among Catherine Beattie's Bees.

On page 516, August 15, I notice E. F. Robinson's comment on Catherine Beattie's bee disease. Five years ago Anson S. White, of Cowyche, Wash., had bees with the same disease. I, as inspector, advised requeening, which he did with success, as he has had no trouble from the disease since then.

JESSE W. THORNTON.

North Yakima, Wash., Sept. 5.

Chickens Eating Bees, etc.

We are having no more trouble with the sore-head. The chicks are doing well. We are having fine weather. When it gets too cold up there, come down home once more.

A man who will let chickens eat bees, as Mr. Brown admits doing, p. 598, Sept. 15, deserves criticizing. If no one does it better, give him my opinion of it.

Bradentown, Fla., Sept. 24.

D. W. ABBOTT.

Our Homes

By A. I. Root

And Adam called his wife's name Eve because she was the mother of all living.—GEN. 3:20.

Unto the woman he said, I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children.—GEN. 3:16.

Favor is deceitful, and beauty is vain; but a woman that feareth the Lord, she shall be praised.—PROV. 31:30.

In the introduction to the A B C book, brief mention is made of my paying \$20.00 to L. L. Langstroth for a queen. Below is something further in regard to that transaction. I copy it from the *American Bee Journal* for May, 1867:

Well, as I had got the Italian-queen fever I was bound to have one; \$20 was a big price to pay for a single bee, as my friends expressed it, but I thought that in bees as in other things the best was generally the cheapest and surest; and so away goes the \$20 greenback with an anxiety and impatience for the result not equaled by any other transaction where several hundred were at stake.

The days at length passed as days always do, I believe, and a reply came, and, shortly after, the tiny movable-frame hive, and the beautiful little strangers as kind and gentle as kittens.

At first, great preparations were made in a room on purpose to open the little hive before a window, as we supposed of course they would fly, but not a bee moved off from the combs; they were taken out and looked at, handled, caressed, and even *breathed* upon, without stirring a wing, and the retiring modest little queen, with her beautiful tapering form, was already worth the \$20 just to look at.

Great was the fear that that important ceremony of introduction to the black natives might miscarry in some way, and over and over again were the instructions read before commencing.

After six hours the Italian queen was placed in a cage on the frames, and, at the proper time, as the cage was opened, my heart stood still, and so did the bees; and as she silently disappeared between the combs I drew a long breath of relief, for I knew that my *highly esteemed* \$20 queen was safe.

I think I have before remarked that never in my life did I make an investment that brought me more satisfaction and profit than that \$20.00 I paid for my first queen. There was much sport and merriment here in Medina when it was noised all over town that I had paid \$20.00 for just one little "bug." But that one little bug became the mustard seed that started an industry now known all over the whole wide world. Please excuse me if I remark right here that the goods our company sent to bee-keepers during the past season amounted to over half a million dollars; and many of them have gone to the "utmost parts of the earth." Now, why was it that that speculation was a wise one? How did it come that I could *afford* to pay out of my scanty means at that time such a sum of money for just one little insect? How does it come that our rural friends can many times afford to pay big prices for choice domestic animals? Well, the secret of the whole business I have just been talking about is that this queen was a *mother* bee. If you turn back to that old *American Bee Jour-*

nal you will notice that, after many narrow escapes, I succeeded in preserving her alive through the winter, and in the spring I proceeded at once with boyish enthusiasm to raise queens enough to make quite an apary. There was no Italian blood at that time in this vicinity. In fact, very few Italians, comparatively, were to be found in Ohio, nor in the United States, for that matter. As the result of my enthusiasm (which kept up day and night, winter and summer, for many a year) the progeny of that \$20.00 queen was scattered far and wide. When I started out amid much opposition to raise dollar queens, and advised others to go into the business, no one can tell how many *tons of honey* were the direct result of that one purchase.

One reason why so much value centers in a queen is that, when you go into bee-keeping, you do not need to buy a pair or a trio, as you do with poultry. You simply purchase a mother bee—one that has already met a drone, and you could take her out on an island and *people* it with her progeny.

Well, this Home paper is not going to be about bees nor poultry. My subject is the *mothers* of the human family—perhaps the mothers of *American* sons and daughters particularly. Are we, as a people, looking after the welfare of the mothers, on whom so much depends? Our first text tells us that Eve was so named because she was the "mother" of all living (like the queen bee I have been talking to you about) and perhaps we may stop and consider right here the terrible *calamity* that fell on all humanity from that time up to the present, *because* this mother of the human race was indiscreet, to put it mildly, in listening to the voice of the serpent. May the Lord be praised that, through the gospel of Jesus Christ and his teachings here on earth, all motherhood has been elevated and raised up since that first terrible fall. But the serpent is *still* among us or we should not have the divorces that threaten just now to be worse—yes, a thousand times worse—than smallpox or cholera, because mothers are *still* not only listening but permitting themselves to be *beguiled* by the serpent.

Forty-five years ago I took pains and spent considerable money to protect that one precious queen during the winter. A few days ago a gray-haired mother—a mother in Israel, I am glad to say—told me of an old silver watch that her husband, who is now dead and gone, bought of me for \$48.00. The watch is still doing good service, one of the first American watches. But why talk about watches in connection with mothers? Well, she said further, "Mr. Root, my husband paid you for the watch with eight colonies of bees; and you purchased those eight colonies of bees so as to be *sure* to winter over that \$20.00 queen."

From the above you will not only see that I paid \$20.00 for the queen, but when the colony where I placed her had almost "pettered out" as the result of experiments I invested \$40.00 more in bees to preserve and

prolong her life. My friends and neighbors at that time thought it was a sad thing to see a good business man going crazy over bee culture. But now let us get back to the mothers. I invested all this time and money in that one queen because she was the mother I expected to rear a large family from. May be, however, *she* did not expect any thing; but I tell you *I* did. I built big air castles all that winter about what I was going to do with her. Well, if it paid me to invest so much time and money to take good care of that one queen, how much more will it pay us—you and me, friends—to take the very best of care of the "*queens*" in our *homes* especially. Dear brother and sister (and I wish to include the whole wide world in what I am going to say), for God's sake let us take the best of care the world can give of the wives who are *approaching motherhood*.

Our second text tells us of the terrible burden laid on poor weak women's shoulders—the burden of motherhood. And this is a burden that can not be escaped. We all laugh about the folly of the fellow who filled a hollow tooth with dynamite; but before he applied a match he recollected he could not *run away* from it to a place of safety. My illustration is a poor one, but it may help us to comprehend how the poor mother is *chained down* to her burden. She *must* meet the crisis and endure the pain and sorrow. There is no escape except through crime, and a terrible crime, too, against both God and man. Of course, there is such a thing as escaping the pangs of motherhood by having no children at all; but the older I grow the more I am impressed that this, too, is a sort of crime in God's sight if not in the sight of man, and a sin that brings its own punishment. How many times do we find otherwise happy homes where there are no children! When Mrs. Root and I formed a partnership and started in life together, we planned to have several years together without children; but God, in his infinite love and wisdom, as I have before told you, sent little prattlers stringing along until there were five of them. Now, where would The A. I. Root Co. be to-day had we been permitted to have our own way in the matter? and where would have been the nine beautiful grandchildren that are the delight of our lives every day in the week? When I saw three baby girls on the street a few days ago, that in my eyes were as beautiful children as the world ever produced,* and when I re-

flected that they were not only my own flesh and blood, but also flesh and blood of the dear woman whom I love now more than any thing else in the wide world—yes, I might almost say more than *all* else—my heart bounded with such a thrill of joy and thanksgiving that I felt like breaking out with a good old-fashioned Methodist shout of praise. For heaven's sake, dear reader, do not think of planning or even *wishing* for a "childless home." If you are not already married, get about it; and then as soon as circumstances will permit, help our nation to avoid "race suicide." People the world with godly and God-fearing people in order that we may have a better chance to stem the rising tide of evil. Take care of the mothers and then take care of the children. In spite of all that has been done during the past hot summer to save the lives of the little ones, I find this sad record in a recent issue of the Cleveland *Plain Dealer*:

ALL DEATH-RECORDS BROKEN.

All records for a single day's deaths were broken in Cleveland yesterday when the health-office statistics showed fifty-one mortalities.

Of the total, twenty-two were children under one year old, while four more were less than two years. The health-department officials, while not blaming the hot weather directly for the unusual death-roll, believe that it was largely responsible, since most of the children succumbed to cholera infantum.

Never before in the city's history has a day's death-roll exceeded forty-one.

That we may have a better chance to save these children after they *have* come into our homes, let us give every possible aid to the *mothers*. There is no doubt that thousands of infants have gone into their little graves because the mothers did not have the means to care for them properly—especially the mothers' homes where the father was a drinking man, and, under the influence of liquor, burdened the poor mother with infant after infant *more* rapidly than God designed. No wonder that such children go to the bad with a handicapped mother, and, worse still—yes, a thousand times worse—with a vicious disposition that was inherited from a drunken father. Lord, help.

I am now coming to the point of my whole talk. Why should not the mothers of our land have a voice in making our laws, in voting on the disposition of public money, and deciding whether a saloon shall be planted near the home, and a thousand other questions? Drunken men, or at least drinking men, are permitted to vote. Many times they vote wet, when, if sober, they would vote dry. The drunken father can vote, but not the sober and godly mother of the children. Unless I am mistaken, an ignorant, drunken, and vicious *negro* can vote, but not the ablest and best-educated woman

* Little Katherine, Huber's baby, is just learning to walk. They thought it best to hold her back a little rather than to encourage her in walking too soon; but just now they have decided that she is old enough and strong enough to go ahead. She was out on the walk in the sunshine and her grandmother was her teacher. She became so excited about it that she ran back and forth till she was almost out of breath. When I put my hands out toward her she came to me with a rush; but when I attempted to hold her so as to give her a little rest, and help her recover her breath, she kicked and wiggled to get down on the ground again, and once more test this new and novel method of locomotion. It made me think of the young birds when they test

their wings for the first time; and, later still, of the Wright brothers' students with their flying-machine. What opportunities God in his infinite love and wisdom has placed over us all—first to creep, then to walk, and finally to swim, run a bicycle and automobile, and last, but *not* least, to soar aloft in the blue dome of heaven! As we go to press, some aviating students have succeeded in reaching an elevation of more than two miles in the air. What is coming next?

in our land. A woman who has, perhaps, a family of bright children, may know what is wanted in managing the affairs of the nation as well as her husband does, *because* she is a mother.

Now, with this preface I want to give you the contents of a leaflet that the author, Miss Genevieve Blair Sackett, a beautiful, bright, and talented woman, placed in my hands. Miss Sackett was called to deliver an address at our church on the 25th of September. The Ohio W. C. T. U. placed her at the capital of our State, and authorized her to look after the interests of the mothers in the affairs of the government.* She has the hearty indorsement of the Ohio Anti-saloon League. Just before her address she handed me a little tract; and after I read it over she confessed (when questioned) that she was the author of it.

PROBLEMS IN AMERICAN POLITICS.

Why do we build reformatories, jails, penitentiaries, poorhouses, and orphanages, and license the liquor-dealers to furnish the inmates for them?

Why do we maintain a strict national quarantine against idiots, paupers, insane, and criminals from abroad, and license 250,000 liquor-dealers to manufacture the same brand of human wreckage at home?

Why do we levy taxes to support orphans and widows, and license the murder of husbands and fathers? There are 865,000 whisky-made orphans in the United States. Why, Mr. Voter, why?

Why do we maintain 275 life-saving stations at an annual cost of one and a half millions, and at the same time license 250,000 life-destroying stations at a cost of two and a half billions?

Why do we license the destruction of untold millions? The liquor industry is the only inverted industry we have. Other industries build wealth of the nation by taking a raw product and turning out a finished product worth five or ten times as much. The liquor industry takes the raw product, *boys*, and turns out the finished product, thieves, murderers, degenerates, insane, and imbeciles. It costs approximately \$2400 to clothe and educate a boy, and we license the destruction of one boy out of every five.

Why do liquor-dealers have more direct influence in politics than educators? Is it, as one of our greatest statesmen has recently said: "Because the nation spends four times as much for liquor as it does for education?" Is it not rather because one-half of our citizens are disfranchised, the half comprising citizens whose votes could not be bought nor controlled? Why not let the women vote?

Why should not the paramount business interests which are diametrically opposed to the liquor business be given consideration by our voters and lawmakers? The money invested in breweries, distilleries, and saloons in the United States is small compared to the money invested in farming, manufacturing, merchandising, and transportation. Take away our railroads, and our cities languish; manufacturing and merchandising are soon at a standstill; take away our farms, and the people perish from lack of food; but take away our saloons, and the health, happiness, longevity, and prosperity of our nation are increased tenfold.

Why not let the more than twelve million mothers in the United States answer at the ballot-box which we shall conserve—our *breweries* or our *boys*? Before the civil war a heavy penalty was imposed for furnishing liquor to a slave boy (who represented an investment of several hundred dollars) on the ground that it impaired his usefulness and was a willful destruction of property. Are not the boys of to-day as valuable as the slave boys of the past century?

In a period of government by graft and politics by purchase, why not enfranchise the class repre-

sented most largely the honesty, morality, and intelligence of the nation? Ninety-five per cent of our criminals are men, and only five per cent are women.

Why not let the American women vote? Women vote in Australia, New Zealand, Finland, Norway, Russia; and in Bombay, Hindoos, Parsees, Mahometans, Eurasians, Roumanians, Japanese, and Jewish women voted this year. Even the veiled women of Bosnia, in northwestern Turkey, have been granted the right to vote, and that by Mahometan men, while the American men, the best the sun ever shone on, refuse to take into political partnership, American women. Every vested interest is represented at the ballot-box but the mothers' interest.

Why not let the twelve million and more mothers in the United States vote?

Why not let the 300,000 women school-teachers who have educated the nation vote?

Why not let the 980,000 women in agriculture, who are helping to feed the nation, vote?

Why not let the 1,315,890 women engaged in manufacturing vote?

Why not let the 6,500,000 wage-earning women vote?

Why do we build battle-ships at a cost of from six to twelve millions each, which in a few years will be thrown upon the junk-heap, to defend us from enemies that never appear and wars which rarely threaten, and at the same time appropriate a paltry \$50,000 to investigate the white-slave traffic which destroys more lives than all our wars and pestilence combined? Why not protect the daughters of our nation from the war upon humanity which exists within our borders?

WHY NOT LET THE WOMEN VOTE, THAT LONG-DELAYED JUSTICE MAY COME AT LAST TO EACH AND ALL? THAT TRUTH, PURITY, HONESTY, AND TEMPERANCE MAY TRIUMPH? THAT UNIVERSAL WELL-BEING MAY BE THE LAW OF THE LAND IN A NATION WHICH RIGHTEOUSNESS EXALTETH, AND WHOSE GOD IS INDEED THE LORD?

I will only repeat, in closing, what the the good lady says in the above—"why not let the women vote?" Or if you can not let all the women vote, for heaven's sake let us permit the *mothers* to do so. With all the burden that God and our nation have placed on her shoulders, are they not entitled to some sort of representation in the affairs of our great public?

Now as Jannes and Jambres withstood Moses, so do these also resist the truth; men of corrupt minds, reprobate concerning the faith. But they shall proceed no further; for their folly shall be manifest unto all men as theirs also was.—II. TIM. 3:8, 9.

Perhaps I should apologize for taking so much space just now with clippings from our local press; and were I not convinced that this same state of affairs is going on more or less all over our land, I would not do it. While it is true many States and many counties are being rapidly made dry while the adjoining locality is wet, this fearful work of breeding criminals and crime goes on. Just as our Home paper for the last issue was on the press the following appeared in the *Cleveland News*:

HELL-HOLES THAT SHOULD BE ABATED; ROCKY RIVER AND ITS EVIL RESORTS A DAILY MENACE TO HUMAN LIFE.

This latest suburban crime, ending in the ignominious suicide of a wealthy Detroit business man in the bull-pen of the county jail, was not needed as an illustration of the short and sure way that leads from honor and usefulness through taxicab rides and roadhouse suppers to disgrace and shameful death. It was a typical instance, to be sure, swift, sensational, and complete. But the moral is so familiar as to go without saying.

*She was Legislative Superintendent at Columbus last winter; and is at present president of the Lorain Co. W. C. T. U. Her address is Elyria, Ohio.

Yet the Yates attempted murder and accomplished suicide assert with emphasis a fact long recognized hereabout. Rocky River and its roadhouses are a disgrace to this whole community. More than that, they are a menace.

Not many days ago, according to the confession of one of the youths involved, two men loaded themselves with liquor at roadhouses in the neighborhood, and started out to rob anybody or everybody they encountered on the highways, finally murdering a market woman as she was driving home to Rockport with her husband and child. The confession of the one murderer who was caught contained many such statements as these:

"Then we went to Fischer's place at the Rockport club and had more drinks."

Or, "We went to a saloon at Kamms Corners and had more drinks."

The two murderers, according to the confession, had drinks at city and suburban saloons designated as Kundtz's, Upham's, Nau's, the Mushroom, and so on. Then they felt inspired to burn barns, steal horses, shoot at passing vehicles, and murder a woman.

Yates, would-be murderer, had been "drinking heavily." The woman whom he shot twice with murderous intent is said to have toured the roadhouses with him. At White's roadhouse in Rocky River, where the crime was committed, they were served drinks at 3:40 A.M. The witness who testifies to this circumstance is a deputy marshal of Rocky River village, one Timmerman, and according to his own story he did not interfere until after the drinks had been served and Yates had emptied his revolver at and into the Singer woman!

Rocky River, with its roadhouses and poolrooms, has long been a stench in Cleveland's nostrils. County officers have raided its resorts repeatedly, and repeatedly its unlawful practices have been resumed. Law enforcement seems to be regarded by the village officers as a joke. They attempt to conceal crime.

Other suburban communities may be lax in such matters. The roadhouses where the Rayner murder was incubated were, perhaps, not those of Rocky River itself. But this village has well earned its evil eminence among Cleveland's suburbs, and its ill repute is the more intolerable because of its proximity to such ideal residence districts as Lakewood, Oakwood, and Clifton Park.

It is not to be believed that all or most of the citizens of Rocky River are evil-disposed persons who find pleasure or profit in law-breaking, or relish their municipality's bad name. Probably most of the voters of the village have been indifferent rather than culpable. The Ohio Statutes offer them every opportunity to show their respectability by voting their notorious resorts out of existence.

If Rocky River fails to redeem itself by electing officers able and willing to enforce the laws, interference from outside should not be delayed much longer. Negligent or incompetent municipal officers can be removed. County officers can enforce laws when local officers fail. Cities are authorized to exercise police power, when necessary, outside their boundaries. Rocky River has been endured as Cleveland's hell-hole long enough.

Amen to the concluding paragraph from the above.*

ROOSEVELT AND LORIMER.

May God be praised that we have at least a few men who stand in high places before the people who refuse to have fellowship with grafters. Recently Roosevelt was invited to be present at some banquet where Senator Lorimer (see p. 599) was also to be present; but, of course, this created havoc in the Republican camp; and finally the following telegram was sent to Lorimer:

Col. Roosevelt positively declines to sit at the same table with you. Our invitation to you for this evening is therefore withdrawn.

*By the way, I looked over the number of the Cleveland paper containing the quotation above very carefully, and I can not find a single advertisement of liquors of any sort.

Once more may God be praised that the time seems to be coming when good men will refuse to sit down at the same table with a grafter.

The following, which we clip from the *Commoner*, is W. J. Bryan's opinion in regard to Roosevelt's conduct as above:

Some may be inclined to question the good taste of Mr. Roosevelt's refusal to dine with Senator Lorimer at the Hamilton Club banquet. Mr. Roosevelt's action was indeed extraordinary, but it is probable that the American people will overlook the question of taste in recognition of the distinct public service Mr. Roosevelt rendered when he gave emphasis to the fact that men who profit politically through bribery are not fit for the society of honest men. It is quite true that Senator Lorimer has not been convicted of actually paying bribes, but the evidence that some one purchased votes for him is so complete that, regardless of the verdicts of juries, the public mind is convinced.

And finally we have on the pages of *Holy Writ*, authority for Roosevelt's decision. See below:

I have written unto you not to keep company, if any man that is called a brother be a fornicator, or covetous, or an idolater, or a railer, or a drunkard, or an extortioner, with such a one, no, not to eat. —I. Cor. 5: 11,

AN AUTOMOBILE THAT COSTS BUT LITTLE IF ANY MORE THAN A GOOD HORSE AND BUGGY.

Our older readers will remember that I had one of the first bicycles (a velocipede) that ever came into the State of Ohio. They will also remember that I ran from Medina to Traverse City, Mich., with one of the first automobiles—an Olds runabout; and my write-ups on the automobile and the automobile industry since then would make quite a book. But of late Ernest has done most of the talking on automobiles; but I am ready just now, after having had quite a wide experience with machines of different makes (each of the five different members of our firm has an automobile of his own) for another automobile talk.

In the first place, although I admire the two and three thousand dollar machines, I would not want one for my own use. In fact, if somebody would make me a present of a \$3000 machine it would put me in a bad predicament. My conscience would trouble me every mile I rode in it because of using so much treasure here on earth that might be used for treasure laid up in heaven—to give to foreign missions, for instance, or fighting the rum-traffic here at home. My first Olds runabout that I have been using for six seasons, and that has carried not only two people but four and even more over thousands of miles, is, as a natural consequence, getting to be old and infirm, and we need a new one in our Florida home. What shall it be? Our children suggest a thousand-dollar machine; but neither Mrs. Root nor I feel like using so much money for that purpose. Day before yesterday Huber and I took a trip of about thirty miles to see a machine made by Sears, Roebuck & Co., of Chicago, that costs only \$395. They make a machine for only \$370; but

this one has a very pretty top, and costs only \$395. The man, Mr. Jacob Gesaman, of Canal Fulton, O., has had the machine over a year. As he is a bee-keeper, in the winter time he puts it in the shop, removes one of the hind wheels, and puts in its place a pulley, and runs machinery for making bee-hives and doing various kinds of carpenter work. He runs it up hill and down, through mud and sand; and there *are* some hills, let me tell you, in the vicinity of Canal Fulton, Stark Co., O.

Now, one thing that commends this machine to me besides its cheapness is that it has no water-tank and other machinery to keep it cool. It is *air-cooled*. Secondly, there is no *gearing* about the transmission. There is not a cogwheel to rattle and get dry in the whole machine. Last, but not least, it has solid cushioned tires instead of pneumatic ones that have made and are making so much trouble and worry by puncturing and patching. Just think of it, friends, you who have had some experience with automobiles. No water is needed; no tire troubles, and no gear to rattle where you can not get at it. To make a good thorough test of the machine, Mr. Gesaman took Huber and myself (three good-sized persons) on a twenty-mile trip after dark. We made this trip easily inside of two hours, taking in a good many quite bad hills, and passing a dozen or twenty teams after dark; and as the road was new to all of us, Huber had to get out every little while and strike a match to look at a guide-board. It is true the machine does not run as still as some of the higher-priced ones; but we passed horses and buggies with very little trouble, and ran the machine right close to them. It is true, also, that there is a little more jarring with the solid tires than with the pneumatic; but after riding about thirty miles the same day with one of the best pneumatic, I rather preferred my twenty-mile ride on the cheap machine. The slight jar in running rapidly gives my blood a better circulation than the more luxuriant and high-priced car. Last, but not least, the entire expense for repairs on this \$395 auto car, although it has been run every day more or less, was less than \$10.00. The expense for gasoline is, as nearly as he could figure, one cent a mile.

Just let me give you right here a suggestion about lubricating-oil; and, by the way, the air-cooled machines require rather more lubricating-oil than the water-cooled ones. Well, with the machine he got of Sears, Roebuck & Co., five gallons of oil cost 30 cts. per gallon; and this oil would run the machine a month without cleaning the spark-plug. After he had used up the five gallons of oil he purchased some more at 50 cts. per gallon near home. This last was so poor that he had to clean the spark-plug every day or two; and it did not give nearly as good results even then. Be careful about your lubricating-oil; and perhaps it would be better to get it where you get your machine. When he made his purchase his

brother got a second machine just like it; and his brother's machine has done just as good service as his own. Both are used almost daily. I suppose I hardly need say to the readers of GLEANINGS that any thing that comes from Sears, Roebuck & Co. is *sure* to be satisfactory. Lest you may think I am interested in the sale of their machines, permit me to say they know nothing about what I am writing; and I can not remember that I have ever given that house a single order; but so many of my friends, and those who write me letters, have mentioned this Chicago house favorably, I know something of their ways of doing business. I am so well convinced that these low-priced machines will be a great boon to bee-keepers, and hard-working people of moderate means in general, that I have taken the liberty of making this write-up.

From the above you can learn something about what it costs to run one of these cheap automobiles. Now go to work and figure up what you pay out on horse, buggy, and harness, in the course of a year, counting the cost of furnishing the feed and caring for the horse when you do not need to use it, and see if I am not right about it—that the auto buggy is the cheaper of the two.

On page 601, Sept. 15, I made mention of the fact that the great establishment of Sears, Roebuck & Co., is on the side of temperance. In answer to an inquiry in regard to the matter I received the following:

The A. I. Root Co.—We do not allow liquor on our premises. Our firm is opposed to liquor in every way, and it is one of the strict rules of our institution that our people must not enter saloons any time during the twenty-four hours, within eight blocks of our plant. That makes a prohibition district about a mile in each direction for our employees.

We do not attempt to prescribe for our people what they shall do outside of business hours; but we do insist that no one working for us shall enter a saloon, day or night, within eight blocks of our plant.

SEARS, ROEBUCK & CO.

Chicago, Sept. 30.

FROM CHICAGO TO SPRINGFIELD BY FLYING-MACHINE.

The Chicago *Record-Herald* for Sept. 30 gives a thrilling account of the above \$10,000 flight by Walter R. Brookins, one of the Wright brothers' youngest students. The *Record-Herald* offered a prize of \$10,000 for the feat, and the 22-year-old "cloud-explorer," as they call him, fairly won it. By means of telegrams, telephones, and other means of communication, the whole flight was heralded so the people might come out of their homes by the thousands and tens of thousands, and witness the wonderful spectacle. Not only were the wires kept busy, but the locomotives and factories blew their whistles when he came in sight, so that everybody might get out and see him as he passed overhead. If I am correct he not only excels all his opponents in high flying, but also in long-distance flying. A special train containing Wilbur Wright and a host of friends started to race with him; but he

beat them at every point. He made three stops on the way; but had he not been obliged to wait for the coming of the train containing his gasoline with which to fill his tank he might have made the distance, 187 miles, with only two stops. At one time when the wind was strongly against him the train came pretty near getting ahead; but when this puff of wind let up a little he easily showed his supremacy, at this early stage of the invention of the flying-machine, over the locomotive. The papers call it "a new air-line through Illinois." Expensive railroad tracks and big bridges are done away with. With this new method of travel it is easy to make a bee-line (exactly as the bee has always been doing it) not skipping around the hills and mountains and following the twistings of rivers as land-transportation lines and railways have been doing. I did not notice any mention anywhere on the route of people singing "Praise God, from whom all blessings flow;" but it seems to me it would have been very appropriate.

His average speed, leaving out stops, was 33 miles an hour; and if I am correct the greater part of it was against head winds. At one place where he had to wait for the train containing his gasoline he threw himself down on the ground, boy fashion, and slept till the crowd with the gasoline woke him up. At one time he stopped in a cornfield. From the elevation at which he flew the cornfields looked like pasture lots; but the crowd soon cut the corn out of the way, and he started up out of the field without a particle of trouble. When he reached Springfield he ran up to a pretty good height and circled down like a bird; but the crowds were so great, ready to welcome him, that he really found trouble in finding a place to alight without endangering the lives of some of them.

The *Record-Herald* gives us not only a picture of the boy, but nearly a dozen other pictures of his machine, and of the crowds that gathered everywhere. A copy of the *Record-Herald* was sent us by our long-time friend Dr. C. C. Miller. If you wish to read the whole account, get a copy of that paper of the date mentioned.

Wilbur Wright expresses himself as being well pleased, not only with this new machine (very likely the one we pictured on p. 6) but he seemed also *exceedingly* well pleased with the management of his young pupil.

An old gentleman of Springfield said, as he witnessed the spectacle, "I have seen a horse fly, but I never before expected to see a man fly."

At one point on the route the aviator dropped a note where one of the spectators got it, saying, "Machine is working all right. Will make the trip O. K."

Divers accidents happened along the route to people who were so crazy at the sight of the flying-machine that they forgot every thing else. A little girl was run over, and a boy fell from the top of a box car; and

a man fell and sprained his shoulder in trying to reach the roof of his house by an attic stairway.

At his elevation of something like 2000 feet Mr. Brookins caught sight of the city of Springfield when 44 miles away. He started from Chicago at 9:25, and reached Springfield in 7 hours and 9 minutes. He was in the air 5 hours and 45 minutes, and at one time made 88 miles without descending. In all respects he has broken all previous records.

After the above was in type the following came from our "long-time" friend, the editor of the *American Bee Journal*:

It may interest A. I. R. to know that I saw and touched the identical aeroplane that Brookins went on from Chicago to Springfield. A fellow by name of Hoxie flew there yesterday, using the same machine. It worked fine. There were probably more people at the fair yesterday, *looking up to heaven*, than ever before at that place!

Chicago, Ill., Oct. 6.

GEO. W. YORK.

Poultry Department

By A. I. ROOT

SELECTING EGGS THAT WILL PRODUCE PULLETS INSTEAD OF ROOSTERS, ETC.

Langstroth told us, years ago, that no colony of bees could prosper unless there were daily accessions of young workers—young blood, for instance—for that is what we must have. Well, I believe all our successful egg-farms or egg-farmers, perhaps I should say, declare there must be a lot of pullets coming on every year to take the place of the old hens; and I think it has been estimated that, if you want 250 pullets every year, you must set about 1000 eggs. As a rule it takes two eggs to make a chicken. Again, only half the chickens will be pullets. The males must be disposed of for broilers or roasters. Well, we used to be told that certain eggs, say the long ones, would produce roosters, and the round eggs pullets. But this has been exploded by our experiment stations, and, so far as I know, every other test has been exploded. No man alive can tell whether an egg will produce a pullet or a rooster. But now comes in a new invention or discovery, that is, if it turns out true. We grant in the outset that no one can *pick out* eggs that will produce pullets; but one of our subscribers thinks he has hit on a plan whereby we can produce eggs to order that will make *mostly* pullets. Listen to him:

I will give you something I think is new in the chicken business, at least. Three of us neighbors here have tested it, and found it to come true. Get a full-blooded White Wyandotte rooster and full-blooded Plymouth Rock hens. Put them together; set the eggs from those hens and you will raise mostly black chicks, and all the black chicks will be pullets, or at least it turned out so with our neighbors and us. They may not always all turn out pullets, but they did with us—not a rooster among them, and they made large hens and good layers.

Gate, Wash., May 27.

J. S. BLAIR.

After receiving the above letter I wrote back I thought he must be mistaken; and

he in his reply explained a little more fully. The idea seems to be this: With such a cross of two breeds as he mentions, more of the chickens will take after their mothers than after their father; and those that take after their mother in color will also follow the mother in sex. Now, although I have read thirty or forty poultry journals for two or three years past, I have never seen any thing before touching on this point; and I would not have very much confidence in it even now—not enough to submit it in print—were it not for something I am going to tell you.

About a year ago, as you know, I purchased fifteen Buttercup eggs, and raised to maturity seven chicks. Three pullets and two roosters I took down to Florida, and two Buttercup roosters were left here in Medina. As these were considered valuable, and I had no Buttercup pullets, but forty or fifty Leghorn hens, I thought I would raise a lot of half-bloods and possibly get a few pullets from the lot that at least had strong marks of the Buttercups. A neighbor who has several hundred fowls remarked that he would help me out in my experiments if I would let him have some Buttercup eggs at market price. He set over a hundred of these eggs from the White Leghorn mothers mated to full-blood Buttercup roosters. Buttercup males are red, with black wings, and neck feathers. They very much resemble Rhode Island Reds. Well, we both expected to get at least half the chicks with Buttercup markings. The full-blood Buttercup hens look very much like the Golden-spangled Hamburgs. Well, now for the outcome. Neither he nor I have a pullet that resembles my Buttercup hens in Florida. We have quite a few white ones that have yellow or cream-colored feathers; but the greater part of, say, 100 chicks are white, like their white mothers; and last, and most important of all, they are not only the color of their mothers, but I should say that 70 or 80 per cent are pullets. These cross-bred eggs were all set under hens.* Perhaps some of the old poultry readers can explain this. You have the facts before you as nearly as I can give them; but I confess I can not understand why making a cross of this kind should result in having the greater part of the chicks take after the mothers, not only in color and looks, but also in sex.

Now, then, have friend B. and myself blundered on a discovery that will enable poultrymen to raise a great lot of pullets in proportion to the males where pullets, and not roosters, are what is wanted?

* Since the above was in type the neighbor mentioned above has given me a further fact. He says that some time ago he placed a White Wyandotte rooster with some full-blooded Plymouth Rock hens exactly as friend Blair mentions. He says the resulting chicks were really black, and made black hens—not a color of the Barred Rocks, remember, but black. I did notice that friend Blair says black chicks, but I supposed he meant dark-colored ones like their mothers. Now, this is indeed strange—black chicks resulting when neither parent was black, and when the father was pure white. He says, too, these black hens are excellent layers.

SOILED AND DISCOLORED EGGS, ETC.

I sent you a letter some time ago setting forth what I found to be the practice of the best poultrymen here in regard to housing their chickens. As a new comer I was anxious to get the best as well as cheapest shelter for my flocks on my homestead, and I carefully looked into this matter. Mr. A. I. Root wrote me to know what was done about soiled eggs, if roofless houses were used. May I report that the soil does not soil them? This sand does not make mud. Mr. Stevens, who is regularly in the egg-producing business, washes what few dirty eggs he gets, and lets them dry over night before shipping. The others send theirs to market just as they gather them, and do not have any complaints. Indeed, this market is glad to get almost any thing in the way of an egg.

Denaud, Fla., Sept. 1.

FRANK M. BALDWIN.

Friend B., if you wish to produce "gilt-edged" eggs for supplying fastidious customers—those who are willing to pay an extra price for strictly fresh eggs, and eggs handsome to look at, they must not be exposed to rain, even if the eggs are laid in the sand. If you will remove an egg from a nice clean nest shortly after it is laid, you will find it has a sort of bloom on it like that on a plum; and even picking it up with the fingers, if they are a little sweaty, will injure this bloom more or less; and I have for some time made it a point to wash my fingers thoroughly with soap and water before I gather the eggs; and, no matter how clean the nests are when provided with clean straw or Florida sand, the least bit of rain spoils this bloom as an indication of freshness. A newly laid egg that has not been handled by dirty fingers is to me almost as handsome as a flower; and there are lots of people who are willing to pay an extra price for fancy eggs or fancy fruit. Now, if you do not like to cater to these fastidious people, let your eggs stay out in the rain, and dump them in all together. By the way, I have never found any method of washing eggs that did not destroy the bloom more or less; and if you are saving up eggs for hatching I am sure it will pay to take pains as I have indicated in the above. I appeal to our veteran poultrymen who are getting from five to ten cents above the market price for eggs if I am not right about it; notwithstanding, where your market will not pay any thing extra for fancy eggs the day they are laid, or the next day, of course it will not pay to go to all this fuss.

SWEET CLOVER CROWDING OUT CANADA THISTLES.

We clip the following from the *Rural New-Yorker* of a recent date. Our readers will notice that it is from the same man whose illustration appears on p. 568.

ANOTHER SWEET-CLOVER STORY.

During the month of June, 1906, I purchased 10 lbs. of white sweet clover (*Melilotus alba*) seed and sowed a patch of about an acre, which was infested with Canada thistles; however, it happened a drouth followed the sowing, hence there was a very thin stand. The seed was simply sprinkled over the sod and thistles, and no cultivating previously. The next year it was mown for hay just before it was in bloom, and the few years following it was allowed to stand and reseed itself until now, 1910, it is a thick mass, almost impenetrable, and the average height is five feet six inches to seven feet. And the mar-

velous thing about it is, the clover grew so fast and so thickly that the Canada thistles were choked, and at present there are very few to be seen except along the edges of the patch. As sweet clover belongs to the legume family, it has gathered nitrogen from the air and stored it in the numerous nodules, borne on the roots, to be used as an enricher of the soil.

To sum up, I have killed two birds with one stone, viz., choked out the thistles and at the same time enriched the land; and last, but not least, it has furnished pasture for the bees while in bloom. In raising sweet clover as a forage crop and for hay, prepare the ground as for alfalfa, and sow in August quite thickly, possibly about 25 lbs. to the acre. If a good stand is secured the next spring, the plants will stool: and if it stands thick, as it should for hay, the stems will not be coarse, and the cattle and horses will eat it up clean. However, at first the horses and cows refuse to eat it, but soon get used to it, and afterward eat it greedily. It should be mowed for hay just before it blooms, as the stalk gets too woody, and cattle will not eat it. It is a great plant for green manuring, and when turned under produces great crops of potatoes and corn. As a weed I do not think it is any worse than the other clovers, for it can easily be got rid of by plowing under or cutting the stalk while in bloom.

Sweet clover compared with alfalfa or other clover, I think, stands second to alfalfa and above the other clovers entirely. If mown for hay before the blossoms open, it will sprout, and stock can be pastured until fall. As a weed-eradicator, soil-enricher, honey-plant, and forage-plant, I think it has very few equals when rightly handled. Almost any soil will grow sweet clover. The hardest clay and the most barren-looking soil may grow it, and drouth will seldom affect it. I think if the farmers learn to know the value of sweet clover they will no longer regard it as a weed; and another thing, sweet clover might just as well be grown in waste places and along fence rows as weeds, as it is very valuable for the bees for the honey it yields, so bee-keepers take notice. In this article I have given my experience with sweet clover. It came to me as a new plant, and I have tried to find the bad qualities as well as the good, but they are all good in my estimation.

Lancaster Co., Pa.

E. S. HACKER.

I confess that the above is a surprise; but come to think of it I can readily understand that in poor soil where Canada thistles would not make a very luxuriant growth, sweet clover, sending its roots down and its tops away up, might choke even the Canada thistles; and it seems to me friend Hacker has not only succeeded in killing two birds with one stone but that he has killed *several* birds.

SELLING SWEET-CLOVER SEED TO HIS NEIGHBORS, ETC.

Those who have read our sweet-clover book will recall that Frank Coverdale is growing sweet-clover seed on a scale perhaps as extensive as almost anybody else; and the following letters tell of his success:

We have just bound with a binder 30 acres of white sweet clover which is the right kind for farmers to sow. We have four big stacks, and it is full of seed. It is fine business harvesting this seed, as it handles so nicely. I wish I could toss you a bundle. In three weeks or so we will hull it out clean. This clover certainly makes the very best hog pasture of any of the clovers. I have tried alfalfa, alsike, and red clover, but *alba* is by far the best of all. What a money-maker the clover would be if farmers could be taught how to sow and use for hog pasture! I have run over 100 head on my fields, and every one who sees them is enthused with results; but it is not a weed. Some are ordering seed. One field where hogs ate it down to the ground, the hogs were taken off Aug. 15, and it stands now 10 inches high. This I will cut for hay in October. It is a fine field. *Melilotus officinalis* begins to bloom May 25, and makes a very strong growth during May. This is

the seed that I am so anxious to get and sow in corn at the last plowing, to be plowed under the following May. The white is not good for this purpose; but in a small way this large yellow has shown very flattering results. This variety doesn't bloom until the second year.

Delmar, Iowa, Sept. 3.

FRANK COVERDALE.

We thrashed those stacks to-day, and the seed is selling rapidly to my neighbors, they taking from two to three bushels each. What do you think of that? and it is over half gone at \$10.00 a bushel. There is going to be a liberal market for *Melilotus alba* the coming winter, especially if I write for a few of the leading agricultural papers, as the editors are asking me to do.

Delmar, Iowa, Sept. 13.

FRANK COVERDALE.

Friend C. refers in the second letter to his writings for the agricultural papers. These writings, no doubt, *do* advertise the seed; but in a matter of so much importance to the general farming community all over our land, we can readily excuse him, and the journals that accept his articles for such "free advertising."

SEED CORN—IF NOT GATHERED, GET ABOUT IT AT ONCE.

Farmers' Bulletin, No. 415, on seed corn, is a most valuable pamphlet of 12 pages, just out. You can get it by applying to the Secretary of Agriculture, Washington, D. C. There are also ten other bulletins on growing corn, any or all of which will be sent free of charge. This bulletin states that the farmer could well afford to pay even five dollars a bushel for good seed corn instead of planting the kind of seed he ordinarily uses. But a better way, rather than to *buy* seed, is to grow your own. This is true, because the corn that succeeds best in one locality may not succeed at all in another. Use seed corn grown on your own farm, or, at least, in your own neighborhood. The wisdom of this has been proved over and over. Make your selection before the corn is cut; then put the ears in a dry place without their touching each other. Keep your corn in a dry place until planting-time. Millions of dollars are wasted and thrown away, in money and labor, by the folly of planting poor or indifferent seed. And be sure to save *enough* so that you can plant over if necessary. By all means get these bulletins and study them; but, most important of all, select your own seed corn, if it is not already done, this very minute, and put it in a dry place. You will make bigger wages in looking after your seed corn right now than in any thing else you can do.

SWEET CLOVER RECLAIMING LAND GIVEN UP TO THE DOMINATION OF CANADA THISTLE.

The two articles in this number in regard to sweet clover and Canada thistles open up an entirely new field, not only to the bee-keeper but to the general farmer. I am told there are vast tracts of land in Canada deemed almost useless because of the Canada thistle. Now, if sweet clover will crowd out these thistles and at the same time furnish more fertility, and better fertility than any other legume, it is going to be a boon to the whole of America (if not to other parts of the world) that nobody yet dreams of. Will our different experiment stations take hold of this and demonstrate how *much* is really possible along this line?

Gleanings in Bee Culture

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Editorial

THE new revised "Advanced Bee Culture," by W. Z. Hutchinson, will be worth reading. It will contain some of the author's very latest ideas on bee culture.

DR. MILLER's Stray Straws will be conspicuous by their absence in this issue. At this writing they have not yet arrived. Whether the mails are at fault or Dr. Miller is sick we can not say.

WHAT TO DO WITH BROKEN OR OTHERWISE UNSALABLE COMB HONEY.

THOSE who do a business of putting up honey in tumblers or large-mouthed bottles will find it will pay them well to take all their broken or unsalable comb honey, cut it up into suitable-sized chunks, and put them in tumblers of nice extracted honey. There was a time when the public was a little suspicious of honey in this form; but since the national pure-food laws have gone into effect, the bottler will find a ready sale for chunk honey in tumblers.

A BEE-BOOK FOR FARMERS.

THE second edition of the "Pearce Method of Bee-keeping," by Joseph A. Pearce, of Grand Rapids, Mich., has been issued. The price is not stated, but we should judge it is 25 cts. The Pearce method is a plan for the production of either comb or extracted honey for the farmer, professional man, or any other man who has not time to look after swarming or to fuss with the bees. We believe the general details of the plan are good. Further particulars can be obtained by writing to the author. Send orders to Mr. Pearce and not to us.

THE NATIONAL CONVENTION AT ALBANY.

FROM the report in this issue on page 697, given by our special representative, Mr. W. A. Selser, at the National convention at Albany, we judge there was not only a good attendance but a good meeting. We regret very much that it was impossible for a member of our editorial staff to be present to enjoy the feast of good things that were evidently spread before the bee-keepers.

We expect to show a large photo, in our next issue, of the whole convention assembled on the steps of the capitol building. There are some faces in it that some of our convention-goers will, perhaps, recognize.

PROPER ARRANGEMENT OF THE COMBS FORMING THE WINTER-NEST.

EACH spring brings its list of letters from bee-keepers whose bees died, leaving plenty of honey in the hives. There are many reasons for this; for instance, the honey may not be in the right place as far as the location of the cluster is concerned. Mr. Bain has been going through our yards, making sure that the winter-nest is arranged right. A honey-producer who has not handled his combs very much through the season is not likely to find that the bees have arranged their nest wrong, and it is likely that feeding will be all that his colonies will need if there are not stores enough. If the combs have been handled considerably, however, so that they are disarranged, it will be necessary to look them over to be sure that they are in the right place. The combs in the central part of the cluster should contain some honey in the upper part, but should not be filled solid. On either side there should be enough full combs of honey to last the bees through the winter. Care should be taken to see that no empty comb separates the honey from the cluster. The only colony that Mr. Bain lost in the home yard, last year, was one where he had overlooked a frame of foundation that separated the honey from the bees. On account of the continued cold the bees really starved because they could not go around that foundation to get the honey on the other side.

If feeding be done in September, especially with an Alexander feeder, the bees arrange the honey in a way that can not be improved upon. It is a good plan to feed in the fall when colonies are short of stores, reserving the combs of honey that may be on hand to use in the spring. Ordinarily, the beginner had better not feed syrup in the spring except under special circumstances, but combs of honey are always safe.

WHY WE ARE OPTIMISTIC.

WE ought to be thankful this year that we have no honey-dew in the hives for this winter. Last year there was a large amount of honey-dew to fear for this winter. A

year ago there was a large amount of honeydew in the hives, in nearly all sections of the country, and it was naturally expected that there would be a heavy mortality as a consequence, and there was in some localities where the stores were nearly all honeydew. But, fortunately, this year the winter stores are either sugar syrup or the very finest well-ripened honey.

Another fact that adds a little to our optimism is the very heavy mat of clover that seems to be growing everywhere. The drouth that set in during the latter part of the summer did not seem to affect the clovers. In most localities clover seems to be abundant—at least that is the report. If it does not winter-kill, clover will be very much in evidence next year.

Still again, prices on honey never showed a better upward tendency than now. We see no reason why they shall not continue to go up. The general advance in other things will compel this.

TOWNSEND'S NEW BEE-BOOK.

TOWNSEND'S new bee-book we hope to have ready for delivery very soon now. This will be about the size of Alexander's and Doolittle's books. We will furnish this work and a year's subscription to either new or old subscribers for the price of GLEANINGS alone—\$1.00; but in the case of old subscribers the cash must accompany the order *before* the subscription expires. We can not afford to make this liberal offer to those who allow their subscriptions to get in arrears.

In this connection it is proper to say that Mr. Townsend is one of the most progressive, most successful, and one of the most extensive bee-keepers in the United States. If any man knows how to give instructions that will lead to success in our chosen pursuit, Mr. Townsend is that man. While the book is written especially for beginners, it has so much of value in it for the veteran that the old-timers will find profit in reading it as well as those who are just making a start.

IS IT POSSIBLE TO WINTER MORE THAN ONE QUEEN IN A HIVE?

WE are getting some inquiries asking if it is possible to winter ten or a dozen queens over one brood-nest, the idea being, of course, to keep a surplus so that, when one dies in any one of the colonies, another from the surplus in hand can supply the deficiency. Again, it often happens that a queen-breeder wishes to keep over a surplus stock of queens so he can fill orders, not only early next spring, but all winter when the weather permits.

We know of no *reliable* method by which this can be done. Ordinary mailing-cages of queens, of course, can be set on the top of a brood-nest, and the queens may live a month or so. It is, perhaps, more feasible to make up little boxes of bees (say half a pint) and give each a queen; then place each

one of these boxes with a wire-cloth bottom over a powerful colony.

There are several of our correspondents who have claimed to have a successful method of wintering a surplus of queens in connection with one colony; but after having tried a number of them we have given them all up as unreliable. We found it much more feasible to put all such surplus of queens into weak nuclei, one and two frame, one queen to a nucleus. After the queens are sold out the bunch of bees can be united to another bunch that has a queen.

Of course it is understood that no scheme of wintering a surplus of queens in connection with one cluster of bees would be successful except in a good warm dry cellar of uniform temperature. It would not be feasible to do any of this kind of work for outdoor wintering unless the climate was very mild.

CLAY SOIL NOT ADAPTED FOR WINTERING BEES IN CLAMPS.

AT numerous times we have had inquiries as to whether it was feasible to winter bees buried up in long trenches or what are commonly called clamps. In referring to the matter in our A B C and X Y Z of Bee Culture we say it can be practiced only "where the soil is sandy and porous;" . . . "can not be made use of in a location where the soil is composed largely of clay." One of our readers wrote to Mr. E. D. Townsend direct, and he in turn sent both the inquiry and the letter to us. As the matter is of considerable importance we take pleasure in placing both the letter and the reply right here, because now is the season when clamp wintering will be under consideration. The following is the inquiry:

Mr. E. D. Townsend:—I have been reading in the A B C and X Y Z of Bee Culture of your method of wintering bees in clamps. The writer states, "This plan can not be used in a location where the soil is composed largely of yellow clay." Now, we have a heavy yellow clay subsoil, and the black soil on top is pretty thin. Do you think this plan can be used here, provided ventilation is sufficient? I have in my mind ventilation-tubes running below all the covering, down among the bees. Your opinion in brief would be very much appreciated.
Harmony, Minn.
P. B. RAMER.

To this Mr. Townsend replies:

Mr. P. B. Ramer:—Answering yours of the 10th inst., I would say that your soil is just the kind that I advised *not* to use to bury bees in. We "clamped" 155 colonies last winter, all alive and in fair condition last spring. These bees were located in a place where the soil was about as you describe yours to be. Did we bury them there? No; we moved them four miles to a sand knoll to winter. I would advise *not* to bury them in the soil you mention. Bees winter very well in clamps provided the soil is a light sandy one. With natural drainage a knoll is preferable.
Remus, Mich., Oct. 22.
E. D. TOWNSEND.

COMB HONEY AT 25 CENTS, AND EXTRACTED AT 30; THE EXODUS OF PRODUCERS FROM COMB TO EXTRACTED.

ONE of our representatives while in Boston recently stepped into one of the fancy grocery stores, and there was amazed to see fancy comb honey marked 25 cents and ex-

tracted in one-pound^s tumblers at 30. We have known all along that extracted was creeping closer and closer to comb honey; but we never ran across a case before where it was *actually in the lead*.

As a matter of information we should be glad to have our subscribers report how comb and extracted honey are retailing in their markets. Send us a postal card, saying comb honey is so much and extracted so much in glass or tins. Bear in mind, what we want to know is the *retail* or price consumers have to pay, and not the wholesale. We know what the wholesale figures are.

Possibly the upward tendency on the part of extracted honey, or, rather, perhaps we should say, the tendency of prices on the two kinds to creep more and more nearly to a level, will explain why so many producers are changing from comb to extracted. But a word of caution should be entered right here. If producers continue to drop comb honey for extracted, the price of comb will be soaring, and extracted will be trying to find a buyer. This is the inevitable law of trade, and some producers may be sadder and wiser if they make the change. At the present time it is a comparatively easy matter to buy extracted honey in any quantity; but a good quality of comb is hard to get at any price. The supply is very limited. The jobber or the commission man will tell you so if he is honest. So far as we can ascertain, one jobber is not disposed to sell part of his stock of honey to another jobber, because he knows he can dispose of all he has to the smaller retail dealers.

If any one knows of a large quantity of comb honey of first quality that can be secured, he will do well to communicate with The A. I. Root Co. We will find him a buyer instantan. We suspect there is some comb honey still left over in the hands of producers. These producers will make a big mistake if they hold much longer. Past experience shows that after the holidays there will be quite a quantity of comb honey seeking a buyer.

A NEW OLD SCHEME FOR CONTROLLING SWARMS.

THE reader's attention is particularly directed to a scheme for controlling swarming by the manipulation of an entrance-switch in the bottom-board. We refer to the device by J. E. Hand, illustrated and described on pages 692 and 693 of this issue. While the idea of working two colonies side by side, impoverishing the one and strengthening the other by shifting positions to curtail swarming, is old, yet the detail of the plan that our correspondent shows is very unique. By merely shifting the entrance-switch, the flying bees or the entire working force can be directed either to one hive or the other on the same bottom-board. In doing this at intervals Mr. Hand is enabled to break up all thought of swarming on the part of the one colony that is preparing to swarm; and the other, having received its

working force, is thereby put in such a prosperous condition that it will go right on storing honey in the supers. As we understand it, it works something like this: The colony on one side, under ordinary conditions, becomes so prosperous that swarming-cells are started, for we assume that the condition is at the beginning or about in the midst of a honey-flow. Just before the bees have an opportunity to carry out their intention of swarming, the entrance-switch is turned, throwing all its entire field force into the colony on the other side that is not very strong, and has no notion of swarming. The super or supers that were on the colony that was proposing to swarm are transferred to the other hive. The flying bees rush into exactly the same entrance as they did before, and over exactly the same alighting-board; but instead of going into the hive where swarming-cells are started, they are forced in the opposite direction into the hive where no preparations have been made. All the working force of the colony about to swarm having been transferred to the other colony, the work in the super goes right on just the same. In the mean time, the colony that has just been robbed of its field bees has been so depleted in strength that it destroys its cells and merely attempts to hold its own. In the meantime, the colony that has received that heavy force of bees will probably, within a few days, begin to build its own swarming-cells. Just before it swarms, the switch-lever is shifted back to the first position, when colony No. 1 receives all the flying bees and the supers. So on the shifts are made back and forth, thus preventing swarming, and getting the force of *two queens* into one set of supers.

Along last summer we visited Mr. Hand and saw the actual working of the plan. He had had no swarms in colonies worked on that scheme, and apparently was getting a good crop of honey. Our correspondent will describe this system still further; but we thought best, in the mean time, to describe the basic principle, so that our readers will understand a little better the new Hand system of swarm control.

The reader will naturally raise the question whether the colony that receives the large force of working bees will not, through the operation, lose its queen. Mr. Hand says not, unless conditions happen to be abnormal. In the height of the honey-flow, bees are much more tolerant of their queens than under other conditions.

Our friend worked out this system over a year ago, but he did not have an opportunity to try it until this summer. It is, perhaps, too early to decide what its probable future will be. Suffice it to say, there are certain features of it that *look* attractive.

The fact that one can use his regular hives, whatever they may be, and provide only a special bottom-board, is very much in favor of the plan. The old bottom-board would have to be discarded, and a double bottom-board made on the lines shown in the photograph on page 692.

Siftings

By J. E. CRANE, Middlebury, Vt.

Mr. Townsend's wax-separator appears well worth adopting, and far better than any strainer so far used. We find it very difficult to strain honey left on hives until all sealed and taken off with bee-escapes, p. 402, July 1.

Page 404, July 1, Dr. Miller says bees were at the point of starvation until June 8, when warm weather came and bees could gather honey. The warm weather did not come here until five days later, when the storm-clouds rolled past and our troubles were over. Then we had five weeks of almost constant sunshine.

There has been some discussion of late as to whether bees get any honey from roses. I believe I have seen them at work very freely on wild or single roses, and I see no good reason why roses should not yield honey, as they belong to the same family as the apple, pear, plum, cherry, raspberry, etc. If one species of a given family of plants yields honey we may expect they will all do so.

I believe the article by F. J. Root, p. 410, July 1, is of more than ordinary value if bee-keepers will only take his advice. I believe free advertising in the popular magazines of the day would add very largely to the consumption of honey. The fact is, a large part of the people know little about honey as an article of food, and more do not buy because it is out of sight and out of mind. Bring it to their attention, and you create an appetite for one of the choicest sweets nature affords.

Page 423, July 1, Mr. E. B. Mowry tells us why he prefers black bees to other breeds of bees. I say "breeds," for I believe the different kinds of bees we discuss are only different breeds, as are Jersey or Durham cattle, and, in fact, not nearly as great a difference in them as in the various breeds of cattle, sheep, or pigs. Mr. Mowry finds black bees more productive than Italian. Some 27 years ago I bought fifty colonies of black bees, and among them were some that were very great honey-gatherers. I was telling one of my men recently that now I believed if I could get hold of the same strain again I would try to breed from them, as one of them gave me more surplus comb honey than any other I ever had. Recently I went where I bought those bees to see an extensive bee-keeper, and he told me his best or most productive colony gave him 160 lbs., and was black. He said further, the hive was one his father gave him, from

whom I bought bees 27 years ago, which shows quite conclusively to my mind that we may find some strains among our native blacks that are well worth cultivating.

The discussion in the May 15th number of GLEANINGS, on the size of hives, is of a good deal of value to beginners at least. The suggestion that all use a ten-frame size, varying capacity of hive by depth of frame, is a capital idea. It is an easy matter if one is using a ten-frame hive to put in a division-board if he wants only eight frames. One of two frames used outside the board, if filled with honey, is exceedingly handy in such a spring as this to place in beside the brood. Besides, I am coming to the conclusion, after many years of experience, that the larger brood-chamber is more profitable. It happened this way: I find my neighbor who uses ten frames gets just as much honey per colony as I do with much less care, and, in addition, does not have to feed nearly as much in the fall for the winter. There appears, also, to be less loss in wintering colonies with larger brood-chamber because we find swarms will be larger in the fall in such hives than in those with a less number of frames.

THE REAL PRICE OF BULK COMB HONEY IN SOUTHWEST TEXAS.

BY OTTO SUELLENFUSS.

On page 580, under "Bee-keeping in the Southwest," the statement is made, "Several years ago the reigning prices were 8 cts. for bulk comb honey and 6 for extracted honey," which is correct; but further down the same writer says, "To-day 10 cts. is the average price for bulk comb honey, and 8 for extracted. Some who sell direct are realizing even better than this." This tends to give the bee-keeping world an erroneous idea of the prices which the bee-keepers of Texas receive for their product this year. Excepting a few large producers who sell their honey direct, the bee-keepers here in Southwest Texas have received this year for bulk comb honey, in 60-lb. cans, 9 cts. The price for bulk comb honey in 60-lb. cans is mostly taken as a basis. The smaller-sized tins fetch $\frac{1}{2}$ cent more for each size smaller, making it this year $9\frac{1}{2}$ cts. for one-gallon pails; 10 for 6-lb. pails, and $10\frac{1}{2}$ for 3-lb. tins. The price for extracted honey was 7 cts. in 60-lb. cans. That was in the spring. For the last three months the market for extracted honey is rather dull, and it is moving very slowly at 6 to $6\frac{1}{2}$ for water-white.

Bee-keepers having a lot of extracted honey on hand yet will do well to keep it until cool weather sets in, as there seems to be a greater demand for extracted honey during the winter months.

San Antonio, Texas, Oct. 4.

Bee-keeping in Southern California

BY MRS. H. G. ACKLIN, GLENDORA, CAL.

A grocer and a bee-keeper were talking about candied honey recently, and in the course of the conversation the grocer gave the bee-keeper a few pointers about keeping honey in a liquid state. The plan he followed was very simple. He just mixed the honey with glucose or corn syrup, and it stayed liquid a long time. This is no joke. It actually happened, and less than 100 miles from my own town too.

We paid Mr. and Mrs. C. C. Schubert, of Santa Monica, a visit the other day, and they drove us up Mandeville Canyon, where some apiaries are located. The Pritchard apiary was the first one, but nobody was at home except the bees. The location is quite pretty, and made one feel like going right to work; but, of course, there was nothing to do or the owner would have been there. Two or three miles further on is the apiary of John Moll. Mr. Moll was at home, and kindly gave us the use of his premises. We cooked steak over an open fire, and had a delightful repast in the shade of a live oak. The expression on Mr. Moll's face was a study when I asked him about the honey crop. Evidently he was sorry for my ignorance, but did not want to show it too plainly, and consequently that look. Several miles further up we came to the apiary of I. E. Parish. This, like the first one, was very quiet, the owner being away. But a honey-flow is expected some time, as every thing is in readiness. This apiary is at the head of the canyon. It must be a job to haul supplies up and honey back. I think people who operate those canyon apiaries deserve all they get, and more than they got this year. There seem to be innumerable canyons in those Santa Monica Mountains, and bees are kept in many of them. The good roads maintained to those out-of-the-way places were a surprise. The way gets narrow, though, as one gets higher up, and I wondered how two heavily loaded teams could pass. We passed quantities of blue-curl in blossom just before starting up the canyon, but nearly all the other honey-flora was brown and dusty. In fact, every thing is dusty, as people who drive along these roads, at this time of the year soon realize. But when the rains come this will all be changed, and those little mountains will blossom as the rose.

BEE-KEEPING IN CALIFORNIA AS COMPARED WITH THAT IN THE EAST.

A request came to me some time ago to draw some comparisons regarding bee-keeping in different sections of our country. There is so much difference between California methods and the way bees are taken

care of in colder climates that one coming here from the East feels as though the business must be learned all over again. Bees are not revered here as they are back east. They are looked upon purely as a money-making proposition. One reason for that is, there are none kept around our homes, and we never get familiar enough with them to feel a sort of comradeship. Bee-keeping here means going to the mountains and camping for the time that bees need attention, and it is not at all remarkable that people are glad when the honey season is over. With bees right at home, as many people have them in Minnesota, one becomes acquainted with them. The bee-keeper can work a few hours with his bees, and put in the rest of the day at some thing else if he chooses, or take care of them mornings and evenings if he is a business man; and when the honey season is over, supers are taken off and bees prepared for winter. Not so here, as there is no special winter preparation needed. I have seen several apiaries in the last few weeks, and all had supers on still, although, in most instances, the honey-flow was long past. The bees are left entirely alone unless some one happens to make his home in one of those canyons. Bees are not taken account of here as in the East. A few colonies more or less does not matter; or a few swarms lost is a trifling affair. One is hardly counted a bee-keeper unless his colonies can be reckoned by the hundred or thousand.

As to knowing any thing about queens, some claim it is entirely out of the question. Others pay considerable attention to their queens. Instead of being frightened and nervous over foul brood, as we were in Minnesota, bee-keepers here say, "Oh, yes! I still have a few infected colonies, but it is nearly gone. That little bit won't hurt any thing." No unnecessary expense is put into those canyon apiaries, either on hives or beautifying the surroundings, as the crop conditions here are so very uncertain. Next year may be a good one, but there is no surety connected with that "may" as there is in the East. Although there are tremendous yields here occasionally, I doubt if, taken one year with another, the California bee-keeper is any more favored than his Eastern brother. Bee-keeping here is conducted on an extensive scale. One of the apiaries I visited the other day had two four-ton honey-tanks placed ready to fill; but there were only about 125 colonies of bees there.

If I have failed to say just what some would like to know, write me and I will try again.

Bees Expensive Feed for Chickens.

As I have 300 chickens I have had some difficulty in furnishing a suitable meat ration for them. They got after one of my colonies of bees, but I stopped them at once. Perhaps I was wrong in doing so; but I should like to ask Mr. W. E. Brown, page 598, September 15, if he finds it profitable to feed bees to chickens. He has been trying this for some time.

Bradentown, Florida.

D. W. ABBOTT.

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

COMB-HONEY PRICES GOOD.

Now, \$3.25 is a good price for us Western bee-keepers; but those of us who had any surplus honey this year, and had it put up properly, have reached this figure. However, each comb in the case of 24 must weigh at least 13½ ounces, and no unsealed cells dare occur except in the outside row.



FOUL-BROOD LAWS THAT CONDEMN BOX HIVES.

That New Zealand law certainly takes hold of the matter of bees in box hives, cracker-boxes, etc., in the proper way. Any place where bees are kept in these makeshifts is a poor place for an up-to-date bee-keeper, for it is impossible to keep such bees from infection. While bees in boxes are very rare in the West, they *are* found, and it would be a great advantage to have a law such as the New Zealand law. We should have our inspector also getting after the bees in the rocks and trees in the mountains; and any man who knew of the presence of bees in the sides of houses, out-buildings, or chimneys would be liable if he did not report it to the inspector or remove the bees to frame hives. I do not think this would be a hard thing to enforce in this State, for the law would affect but few, and would certainly be an added protection to those who are having a hard fight against foul brood.



WINTER VENTILATION.

We have contracted our entrances to one or two inches, and have used both sealed covers and various types of absorbent cushions. Our experience in this dry country with comparatively mild winters is that absorbent cushions are not a great advantage. Double-walled chaff hives are not used in Colorado, so my observations have all been with the single-walled hives. The winters are mild, almost without exception, till April, having but a few storms that keep the bees confined in the hives more than a week without a cleansing flight. But in April we have a continuous succession of damp slushy snows with much cloudy weather which will prevent the evaporation from the hives that usually takes place during our regular cold dry days of December and January. When I speak of a cold day here in Colorado I mean only a crisp day. Our days are cool in winter, but the cold does not pierce to the marrow of one's bones the way it does in damper States. The moisture does collect on the tops of the

frames of a sealed-cover hive during the damp snowy days of early spring, and so a cover with just a small opening at the top has been found to be sufficient here. A honey-board with an escape-hole in the center and an outer cover over this is the best for our country. The winters are not so severe that we need fear from the cold, and a larger number of bee-men each year are finding out that the bees can use a full entrance with some upward ventilation such as a hole in the inner cover. Hives that have been uncovered entirely for several weeks, and had snow drift in on the combs and bees seem to suffer little damage. The snow is comparatively dry; and the air being dry, the bees do not become damp. Wintering is not much thought of in this country; but we shall find in the near future that a little more care and adoption of Eastern methods of wintering will be a good thing. The double-walled hive and the winter cover are now attracting some attention. We think perfection in wintering has not been reached here, and so a few of the heretofore thought useless practices will no doubt be tried.



MODERN SYSTEMS OF SELLING.

Now that the time of year has come when we are spending some time in selling honey it will do no harm to study the methods of some of the food manufacturers. The large canning and preserving companies send out hundreds of salesmen, and every salesman endeavors to sell all the goods possible. The zeal of the salesman outruns his judgment many times, and he sells the retailer more goods than he can handle. Many salesmen take the attitude that they will sell every man just as heavy a stock as he will buy; and if he has bought too heavily, let him get rid of the stock as best he can. This makes large sales for a while, but a house that pursues this policy soon finds that it is losing trade. Five years of such a procedure will wind up the average firm's business in a given territory. The old and reliable houses go directly to the consumer with house-to-house demonstrations, and Saturday demonstrations in the stores. A district manager for the "Heinz 57 Varieties" told me that he got his best territory by going from house to house one week out of each month, and working the grocers the rest of the time. The grocers will handle any thing the customer calls for, and the real work is to get hold of the customer. The grocer will not believe what a salesman says nearly so quickly as he will act on the request of a customer for a certain brand or kind of goods.

The only kind of salesman who will succeed is the one who can show the housewife the value of the goods, and can also take the same proposition up to the manager for a wholesale grocery, and get him to put in a stock of goods and push it.

Notes from Canada

By R. F. HOLTERMANN

My bees are in winter quarters (outer cases), with an eight-foot fence about the apiaries. They are fed, and ready for winter; and at this date, October 13, I look for a quiet time—shall I say a holiday in more northerly Ontario?

MOISTURE AND NECTAR SECRETION.

Friend Byer comes to the conclusion, p. 317, *American Bee Journal*, that the reason I give for alfalfa secreting nectar is wrong because it did not hold good with alsike clover. The best conditions for secreting nectar from alfalfa are, in my estimation, not the best conditions for the alsike-blossom to secrete. That is my answer to that.

COMB OR EXTRACTED HONEY.

Editor Root states that the tendency is for the production of extracted honey, abandoning comb-honey production. The same is true in Canada. There are many things which tend to make the production of extracted honey less risky and more profitable. I was at one time a comb-honey producer; but I fail to see the money in it unless there is a very great difference in the price of comb and extracted honey.

STRONG COLONIES FOR FALL FLOW.

Mr. D. M. McDonald has a practical apicultural pen, and in his article on page 617, Oct. 1, he strikes at the root of many failures to obtain fall honey when he states, "For working any late flow, crowded colonies, doing quick and expeditious work, are of the greatest importance."

In writing about strong colonies, Mr. McDonald, in referring to the work of these in comparison with the work of weaker, says, "so much so that results would astonish bee-keepers accustomed to medium colonies." The article is well written, and worthy of careful perusal.

AMERICAN FOUL BROOD.

When I think of all that I have read about European foul brood I am forced to the conclusion that this name at present is given to different diseased conditions or else the powers of observation or description of some writers is very defective. I confess I am afraid of the disease. It is, perhaps, not generally known that European foul brood was brought into Canada with bees from New York, in the Niagara Peninsula. I understand, however, that it has been stamped out.

As to American foul brood, Editor Root, page 611, Oct. 1, writes: "While Mr. House did not go so far as to say that requeening with Italian blood would cure American

foul brood, he was most decidedly of the opinion that it was a very important element in any treatment."

I am strongly convinced as to the superiority of Italian and Carniolan bees, and would not keep a black colony 24 hours longer than necessary; but I doubt very much indeed if black blood has any practical bearing upon foul brood, and I do not believe it has any bearing on the cure when the hive is once infected.

REMEMBER.

Under the heading "Letting Bees Rob out Wet Extracting-combs," Editor Root has the following caution: "Of course, if one has foul brood in the vicinity, such wholesale cleaning-out of combs is dangerous in the extreme, for practically every colony in the yard will have a hand in robbing out the combs; and should they contain any germs of disease, foul brood will be spread right and left." I have begun to doubt if it is ever wise to set out combs in this way. If there are many bees in the neighborhood, the bees will fight for the honey, and sting one another to death. If any one doubts this, let him watch the bees or see the large number of dead bees about the pile afterward. Such excitement, too, in the fall of the year, must take very much from the vitality of the bees which go into winter quarters.

AUTUMN.

There is no time of the year when that well-known sentence, "Oh for a lodge in some vast wilderness!" appeals to me more than during the month of October. How the noise and bustle of city life distracts! It may for a time fill a life that does not want to take the time to weigh the things of eternity; but to the one who has been redeemed by the precious blood of Christ, and who seeks to live for the one who loved and gave himself for them, that season of the year, alone with God and nature, should have a special charm.

When we look upon the beautiful autumn tints of the woods, and think that what has brought these tints about is that the trees no longer give their strength to the old leaf, but are setting unseen buds for resurrection life, we can see a parallel to what should be the case in the life of every child of God. We should be dying to the old unregenerate life, and laying up fruit which shall adorn us in resurrection, and how beautiful it is to see such lives! and what an influence and power such have over us! Israel of old had cities of refuge, and there were to be no stumblingblocks in the way of those fleeing to such a city. Instead, there were to be finger-posts to point the way. Our city of refuge is Christ. Are our lives finger-posts pointing to him, or are they stumblingblocks causing those to stumble who might otherwise reach him? For myself, how often I have to say, "Alas! alas!"

Conversations with Doolittle

At Borodino

SOME OF THE ESSENTIALS FOR SUCCESS IN
BEE-KEEPING.

"Mr. Doolittle, do you think I have brains enough to succeed at bee-keeping?"

"Success in any undertaking does not always depend on brains. The persistent toiler whose vocabulary does not contain the word *fail* will, more often than otherwise, outstrip the brainy young man who expects to leap to the front at a bound; and successful bee-keeping, like many other things, requires a person who does not get discouraged by slow advancement, nor weary of digging deep into the details.

"The bright brainy merchant who cares more for gratifying his love of ease or social pleasure than following the daily routine behind the counter or at his desk will hardly be the Montgomery Ward of his time; and the bee-keeper who cares to do little more than hive his swarms and take off the little honey he may have in the fall, rather than exert himself by leaving no stone unturned before he has the maximum number of bees in time for the harvest, will never become a Dr. Miller nor a W. Z. Hutchinson."

"But the merchant works at his business for financial success, does he not?"

"Yes; and we may say what we will about the fun of keeping bees, the prime object in it all is the financial success, and so it has come about that, if the business does not pay, that bee-keeper is not called one who succeeds. There is no question, even, but that *your* ardor would soon begin to abate after starting in unless you heard the rustling greenbacks in your cash-drawer. Whether five colonies or five hundred be kept, each one must be made to pay a fair rate of profit on the investment."

"But bees certainly do not require the labor that a merchant would have to put into his business."

"No lazy person need expect to succeed with bees. The idea that we can sit idly by and become rich while these little creatures that 'improve each shining hour' do all the work, is a delusion and a snare. No one ever did or ever will succeed who looks upon bee-keeping as a scheme to secure money without labor."

"But I was told that bees would work for nothing and board themselves."

"That might be true if you looked at it as the Irishman did when he invited his brother over to this country. The story goes that he wrote his brother a very picturesque letter describing the beauties of America, and finished up by saying, 'Come over, Pat, faith, and all ye have to do is to carry the hod of brick and mortar up the ladder, while the min up there do all the work.' Now, if one looks at the labor ques-

tion like that, then the bees are the "min" upstairs who do all the work, our part of it being only to supply the 'brick and mortar,' so that their work may bring us the best results."

"I suppose you mean by this, supplying the bees with the best hives, etc."

"That might be considered as a small part of the matter; but the location of an apiary is of the very highest importance. Where no nectar-yielding plants abound, there must of necessity be only failure; and simply because there are fragrant flowers about you is not sufficient reason for locating an apiary at that place. Years ago, when my departed mother was in her prime she had a yard of very bright flowers, and about that time I produced an average of 160 lbs. of comb honey from nearly 100 colonies. One day when taking a friend into the honey-room to see all this honey piled up, after looking it over and admiring it he said, 'No wonder your bees did so well, for your mother raised such a nice garden of flowers for them.' There were only two kinds of flowers in that garden which were ever visited by the bees, and these were the least conspicuous of any!

"Then you should know something about the natural history of the honey-bee. When that expression, 'bees work for nothing and board themselves,' was coined, the mother-bee of the colony was called a king-bee, and it was thought that this king directed the movements of his subjects. The practical apiarist of to-day knows better, because of the amount of thought and study he has put into his business from the love of it. Our much-honored Langstroth once wrote, 'There will never be a royal road to profitable bee-keeping. Like all other branches of rural economy it demands care and experience, and those who are conscious of a strong disposition to procrastinate and neglect will do well to let bees alone, unless they hope by their systematic industry to reform evil habits which are well nigh incurable.' If you are to succeed you must be so absorbed in it that you will think bees, talk bees, dream bees, and never tire of their study. You must be one who anticipates their every want, and one who will do the right thing at the right time."

Sub-earth Ventilators.

I wish to build a sub-earth ventilator to my beecellar this fall; but after reading the article on page 517 on the subject, I have decided that I do not know how to build it. I have considered different ways of making it—first, an ordinary drain made of stones; second, an ordinary drain made of stones and cement, water-tight; third, a glazed tile-drain. Of course, all must be put down out of the reach of frost, and as large, at least, as a six-inch tile, or larger.

Hasbrouck, N. Y., Sept. 19.

IVAN C. HALL.

[We would by all means recommend the glazed tile, or what we call here sewer-pipe. The joints should be well cemented, so as to keep out moisture. There will be moisture enough in the cellar without drawing in more of it through a wet sub-earth ventilator.—ED.]

General Correspondence

BEE-KEEPING IN SOUTH AFRICA.

BY THOS. J. COOK.

Bee-keeping, here, there, and everywhere, should, with slight modifications, be based on standard lines. There is no need to enlarge upon the statement which has long been recognized as an insurmountable fact; and that fact is, the keeping of the industrious little insects in modern hives, and devoting scientific study to their peculiarities, with a view to securing a reasonable remuneration from their labor. Therefore it is with much regret that I pen a description of the orthodox methods generally observed in South Africa in the keeping of bees. It is certainly not bee-keeping, notwithstanding the good work of the very few up-to-date apiarists residing in various parts of the sub-continent. I have read a good deal concerning the use of box hives in other countries; but, generally speaking, I do not think other countries are especially conspicuous in this respect.

NOT ON A COMMERCIAL BASIS.

From north to south and east to west, the idea of bee-keeping is regarded with more or less contempt—a hobby for a schoolboy, perhaps, but certainly not an industry worthy of consideration by the older fry, and thus the bees go a-begging at swarming time for want of sympathetic caretakers, so seldom does their swarming-note appeal to the multitude. As a matter of fact, the popular idea of bees and honey is associated with an afternoon picnic party trekking to the veld, armed with a spade, pick, sacking, matches, and sundry other paraphernalia with which to rob a bee-nest when other forms of diversion have grown stale. It is then that preparations are made for "lining" the bees, and this is quite an easy method beside your American method (the comb-box plan). The entire party, to a man, simply crouches down, and, with heads turned toward the setting sun, they mark the flight of the honey-laden bees returning homeward. Or it may happen that the "honey-bird" (as the species is called out here) is heard piping near a wild hive. This bird, by the way, has a high reputation for directing the steps of bee-hunters, and it has never yet been known to raise a false alarm. Whichever cause actuates the party, it is not long before a line of march is decided upon; and in most cases in a few minutes—say from a quarter to half an hour—the hive is located, generally in an ant-heap (there are few trees suitable for bees in South Africa). At the precise moment of commencing operations the leader of the expedition lights the sacking, and, without more ado—no thought for irascible home-coming bees—the spade is brought

into commission with a right good will. The angry onslaught of the bees will soon be manifest, but the work of digging goes on abated. These old-timers have remarkable hides. I have seen a Dutchman, bare-headed, barearmed, with open shirt front and minus socks, take terrible punishment inside half an hour, without making undue mention of the fact. The burning sacking is never rightly brought into use; but as it is thought to be part and parcel of the work, each man follows the precedent. On such occasions as this, bees simply swarm up the trousers legs of the offending visitor; but, as I have previously said, these old stagers have remarkable hides. They would laugh to scorn the very idea of wearing a veil; and as for gloves—well, their contempt for such would be illimitable.

However, notwithstanding the apparent familiarity of such persons with the habits of the honey-bee, they are ignorant to a degree of the knowledge which up-to-date beekeepers acknowledge to be indispensable to success. After the excitement of the first stages of the operation has abated somewhat, some one brings a bowl to the scene of ignorance, dirt, anger, and disaster—disaster to bees and hunter alike—and what remains of the demented bees' handiwork is placed in the bowl, the whole mass being more typical of an earthquake than that of God's masterpiece—man. Alas! there may be seen scores—aye, hundreds—of mangled insects—those that have toiled for the pleasure of the hunter and the ignominy of such untimely end—budding brood in all stages of development, and dirt galore. The whole scene is one of complete disaster. Probably not more than five per cent of the colonies robbed in this way are able to migrate with their queen, if she be still alive; and when, as is often the case, she is killed, there is no place left in the old hive in which to commence housekeeping; for these bee-hunters perform their task with persistency, and allow no corner of the hive to escape their notice; and then, again, these upheavals are always timed to take place at the close of the season, and thus the life-cycle of another swarm is ignominiously terminated. Ah! would that such primitive minds understood the great work of these immortal insects!

Occasionally, however, one meets with one who is more up-to-date in his primitiveness, and who will point with pride to his half-dozen or so kerosene-cases doing duty as hives. An individual of this kind is hard to convince as to the relative merits of his structures and the modern hive. He affirms that bee-keeping does not pay, and that his idea in having so many hives is in order to be sure of having a plenteous supply of the choicest nectar for his own table. He complains that a moth (the wax-moth) comes into his hives, and scares away the bees and usurps the combs, among which the new comer thrives and increases his kind. He regards one's explanation of the circumstances with genuine suspicion, and

concludes generally with a reference to his "bad luck."

CONDITIONS GOOD FOR BEE-KEEPING.

It is remarkable how few evils beset the path of bee-keeping in South Africa. In the first place, there is no known disease to combat; then, again, there is generally sufficient flora in the driest districts to ensure at least moderate returns, while in parts South Africans can well challenge the inhabitants of Imperial Valley and other well-known California bee habitats rich in nectar-bearing flora. I have known as much as 150 lbs. of honey to be taken from a single box hive which had not received the slightest attention from its ignorant owner for over twelve months. If he had had to combat foul brood and sundry maladies known to Northerners, doubtless he would have had another story to tell.

The South African bee is a splendid worker, fairly docile and amenable to civilization, and seems to work with a will among the more congenial conditions, provided the hive is well sheltered from the sun and winds. I know many will not agree with me in this respect; but I have investigated many cases where bees have persistently deserted modern hives, and in nearly every case one or the other cause contributed, undoubtedly, to the absconding persistency complained of. In such cases persons have taken sides with the box hive, and have proved that the bees would remain in these crude structures, in positions where modern hives have proved unsuccessful in this respect. But, again, I have pointed out that, by virtue of the size and often favorable ventilation afforded by box hives (according to the circumstances I have been called upon to explain), the bees have been better catered for with the old than with the new style hive. I need not describe the ceremony that usually accompanies the "take" at the end of the season from such undesirable bee "dwellings," as the same is universal.

I should be lacking in sentiment indeed were I to pass on without paying a tribute to the alacrity with which our bees pursue their calling. Many times during the honey-flow I have seen my bees working at 3 A.M., and as late as 11 P.M., assisted in their quest for nectar, seemingly, by the light of the harvest moon; and, generally speaking, I have no cause to complain of any apathy on the part of the South African bee, either in brood-rearing or storing in supers. Indeed, I have had remarkable success in this respect without making special provision for the same. Another feature of my bee-keeping in South Africa is the phenomenal success which has always attended my queen-rearing operations. I have frequently taken surplus cells from a hive and placed the same in a match-box and tossed them up on to the top of a shelf near the roof of my house, and, without exception, I have always been apprised of the approaching hatching of those cells by the inmates themselves. In walking through my house

I have frequently heard the familiar "piping" of some monarch-to-be, and have promptly attended to her requirements by placing her slender gray form in a cage, and then relegated her to a hive until mating-time.

In their native state the bees here have to contend with the ravages of the ant-bear—an animal very much like your brown bear, but only about the size of a fox-terrier dog. This animal, as its name implies, lives chiefly on ants, which it attacks in their hills by scraping away a hole at the base of their abode. Once inside it scrapes the interior of the hill bare, devouring as many of the inhabitants as it can lay hold on, devoting special attention to their eggs. It is following one of these attacks that a swarm of bees takes up its abode. The ant-bear is wise in his day, and suffers the tenants of the scene of his late depredations to fill their larder unmolested—until *he* wills otherwise. When he thinks there is a sufficient supply of honey in the ant-hill, calculated to appease his desire, he sallies forth. Nothing can withstand his attacks—unless it be iron bars—and inside the ant-hill he goes. Then commences a banquet in wholesale order—bees, brood, honey, and all are devoured *ad libitum*. Nature has provided him with a hide which the stings of our favorite hymenoptera can not penetrate; and, having satisfied himself thus, he decamps, leaving the remaining bees to figure out the prospect of restarting for themselves.

BEE PIRATES.

May be it is meet to record that there is a wasp here known as a "bee-pirate" which is alleged to be responsible for the depletion of many a stock, but I "hae me doots" about the actual total of facts in favor of this theory. I can not do better than to outline the *modus operandi* of this wasp, which certainly does create a certain amount of anxiety with myself, but not from its direct operations. The pirate is a yellow insect possessing a sting, and is extremely smart in its movements. It usually manifests its presence in the apiary about the beginning of November, and remains there until March of the following year. Usually its hours are very regular, and it may be seen between the hours of 9 A.M. and 6 P.M. any fine day, on any point of vantage from within 6 ft. up to the alighting-board of the hive it is watching. I have paid special attention to this insect, and have not the slightest hesitation in stating that each pirate concentrates its attention upon one particular hive. Of course, there may be any number of the pirates up to a dozen watching at the same time. The pirate's mode of attack is as follows:

Usually it is only returning bees that come in for attention. As soon as the bee is within striking distance the pirate pounces upon its victim, delivers a thrust with its sting, and flies away with its prize to its nest, which is generally made in the ground. There the pirate lays an egg on

the under side of the bee in the region of the neck. The resultant larva from this egg is thus enabled to secure nourishment from the honey-sac of the bee as soon as the egg hatches, and thus the cycle is repeated. Now, it will be noted that these pirates molest the bees between the hours of 9 A.M. and 4 P.M. during the summer months (remember the seasons are reversed in this part of the world), i. e., when, according to the best authorities on the subject, there is little or no nectar secreted by any flowers in hot climates. The climate of Colorado and most parts of South Africa coincide to a degree. Reverting to the work of destruction credited to the bee-pirates, I strongly uphold the view I have made by deduction, viz., that the evil effect of the pirates on the bees is not direct, but is attributable to a demoralizing influence on the hives in easy range of them. I have frequently noticed hive after hive in which the bees were to be seen shoulder to shoulder stretched across the entrance from side to side during the period of the day mentioned. It is a striking sight to witness these sentinels strongly entrenched against their solitary enemies, who, from time to time, assert their impatience for attack by flitting from point to point, eagerly awaiting a favorable opportunity to seize a straggler. I have actually seen these pirates march boldly in (always at right angles), and spar with one of the defenders comprising the line of defense; and should the bee—which is not often the case—make bold enough to assail the intruder, the fate of the former is sealed. With a quickness which has to be seen to be appreciated, the bee is seized, and the victor takes to wing in the twinkling of an eye, while another bee in the rear takes up the position vacated by the over-zealous defender. Occasionally, however, the defenders effect a capture, and then there is a distinct note of joy struck up which reverberates throughout the hive, and the invader is subjected to "balling," similar to that which befalls a strange queen at times. But, notwithstanding that the bees frequently imprison the pirate for hours at a stretch, the chitine covering of the pest proves invulnerable to the attention of all and sundry that from time to time seek to wreak vengeance upon it; and, seizing a favorable moment when the bees are not so numerous, and, consequently, the pressure is lesser, the pirate will break away from his would-be captors and once more awaits his chance, which is never long in coming, and is always certain in its result.

The system in vogue among progressive bee-keepers for exterminating these pests is a simple one: A plate containing kerosene and water is placed slightly to one side of the middle front of the hive, and the pirates (which seem to have a particular liking for white surfaces) are caught very soon, although, of course, frequently bees are caught as well. But the great point to keep in mind in this connection is the demoralizing influence which one pirate will impart to a

whole hive—not so much the value of the bees caught.

A TWO-LEGGED BEE-PIRATE, THE AFRICAN KAFIR.

At this juncture I am reminded that I have not been very successful with out-apiaries, owing to the presence of a two-legged "bee-pirate" in the shape of a Kafir. I am afraid my northern confreres would lose heart altogether after putting in a season in South Africa (that is, if they decided to run out-apiaries. It takes a deal of combating, I assure you. The Kafir must and will have both brood and honey. The former he makes into an intoxicating beverage known as "koo-roomore;" and with the latter he regales himself full well. It is here that, for the sake of economy, it is better to invest in packing-cases, for the simple reason that the dusky thief, not content to take brood and honey, takes away to his hut the whole outfit, and lights his fire cold nights, may be, with the fuel thus obtained, the while gorging himself to profusion with his ill-gotten gains, and listening to the cheery crackling of the hive-boards; for what will burn with greater avidity than the propolis and wax besmeared boards of a time-worn hive? Nor am I alone in my experience of the black miscreants' depredations. I have met several bee-keepers who complain in a similar strain.

THE SOURCES OF HONEY.

The markets for honey and wax are always eager for a greater supply than is usually forthcoming, and prices, as a consequence, are good, frequently ranging from one shilling to two shillings per pound for "strained" (not extracted) honey, while for comb honey as much as 60 cts. per section has been obtained retail in Johannesburg. I myself have obtained 54 cts. for comb honey in bulk.

The chief sources of natural nectar are the mimosa and decoma trees, pink heather; and, of late years, the pepper-tree and blue and red gum have contributed largely to the supply of nectar obtained from what might well be termed wild sources, and have come to be regarded as valuable adjuncts to indigenous flora, especially as they come into bloom just about the time when pollen is most needed for building up the brood-chamber in readiness for the fruit-bloom.

Bee-keeping as a business has not been taken up by many people. In fact, I think I am correct in stating that only about three or four persons have as yet settled down to the industry wholly and solely; and their efforts have not been in prominence long enough yet for any definite statement to be made regarding the ultimate success of bee-keeping as an independent industry. From a personal point of view, however, I regard the outlook with optimism. In Natal, it is stated that bee-keeping has not been very successful as a whole, owing to the presence of so many sugarcane fields. The bees have, apparently, developed the habit of visiting these fields,

and have neglected their legitimate work almost entirely, so that the product of their hives—it can not be termed honey—is little above the standard of sugar and water. Of course, this is the case only in those districts where there is the least natural flora. In other parts bee-keeping can be pursued as profitably as elsewhere.

AFRICAN BEE-KEEPERS' ASSOCIATIONS.

Just now things are making a stir apiculturally. Societies are being formed in many districts for promoting the scientific management of bees; and the parent association, with headquarters in Johannesburg, is aiming at instituting a co-operative depot, with branches, for the sale of honey and wax, the product of its own and affiliated societies' members. Indeed, so enthusiastic has this parent association become that already it has succeeded in influencing the parliaments of the five colonies to pass a bill prohibiting the importation of bees and honey, and even foundation which has not been subjected to a temperature of 150 degrees Fahrenheit. But I think this action will not meet with general approval, in view of the fact that large confectionery manufacturers could not obtain all the honey needed, even ordinarily, before the impost, while the general public have had a similar grievance. Regarding foundation, it seems as if some one is aiming at creating a monopoly locally; but even so it is doubtful if the local product would be as good as the imported article; and then, again, it surely will not pay to put down an up-to-date plant for the manufacture of wax equal to that now being manufactured in America—at least for many years to come.

Hives and hive fittings—their names are legion—are very dear here, and in that way prohibit any but the most enthusiastic, or those in good positions from taking up the pursuit. Speaking from an unbiased point of view, I think a Langstroth hive is as good as one can get for the South African climate. Of course, it requires watching like any other make; but, apart from that, it is better adapted to local requirements than any other make with which I am familiar.

There is no special legislation with regard to the keeping of bees in South Africa; and, providing no ravages on the part of our "little friends" are reported, all goes well. But I am of the opinion that the near future will witness many changes all round, especially as there are so many bee-enthusiasts now in touch with one another through the various societies; and as a concluding remark I will say that I could easily commit a greater libel than by stating that bee-keepers in South Africa have a good time ahead.

Broken Hill, N. S. W., Australia.

HORSES PASTURED IN A SWEET-CLOVER FIELD REQUIRED NO WATER.

BY HENRY STEWART.

For a long time I have known that, after stock acquire an appetite for sweet clover, it is relished and makes one of the most nutritious foods; but not until last summer did I discover that it contains all the essentials of both food and drink for live stock.

I have eight acres of very thick sweet clover, which was sown in 1908 with oats. It made a good growth, and afforded a good deal of feed in the late fall and early winter of the same year. In the spring of 1909 until May 10 it was the favorite grazing-ground for the cattle and horses. About June 1 it was clipped with the mowing-machine within five inches of the ground, and, after being fenced, three horses were turned into it. I supposed that they would require water; and as it was but a short distance to a neighbor's pump, a tub was provided and filled with water. To replenish the supply a visit was made every other day; but as no water was taken it was certainly evident that those horses were not thirsty. After several days of total abstinence from water they were caught and taken to their accustomed watering-tank for a good drink; but we were again surprised to find that they had no use for its contents, so they were returned to the field. As they showed every sign of thrift and contentment they were let go, and visited only at long intervals, when water would be put in the tub and an effort made to induce them to drink, which, however, was always fruitless. They were not known to take any water until July 9, when they began drinking a little from the tub.

One of my neighbors claims to have read that stock pastured on sweet clover would require but little water. Who knows any thing about this?

Prophetstown, Ill.

[The above is somewhat of a surprise to me, although I have known several instances where stock got along under some circumstances without water. I take it that in this case there were very heavy dews nights; and the sweet-clover foliage contained a large amount of water which the horses took in as they fed on it early in the morning. Chickens have been known to live and do well in cornfields for weeks and months without access to any water except the dew from the dripping corn-leaves. This is another item in favor of sweet clover. The writer also speaks about clipping the clover down to within five inches of the ground. As this would hold it back from growing seed, I suppose it produced an additional amount of pasturage.—A. I. R.]

The next annual convention of the Michigan Bee-keepers' Association will be held in Grand Rapids, Nov. 9, 10. E. B. TYRRELL, Sec.
230 Woodland Ave., Detroit, Mich.

The Middlesex County Bee-keepers' Association will meet in the City Hall, London, Ont., on Saturday, Nov. 5, at 10:30 A.M. Interesting papers and addresses will be given by prominent bee-keepers. All are welcome. Officers for the ensuing year will be elected. E. T. BAINARD, Sec.,
A. DOWSWELL, Pres. Lambeth, Ont.



GOLDENROD.

BY HARRY LATHROP.

The goldenrod, all out in bloom,
Stands nodding in the breeze,
And sending out a sweet perfume
To lure the honey-bees.

From morn till night its golden light
Shines over vale and hill,
Here hiding broken walls from sight,
There bending o'er a rill.

And far and wide this wealth is spread,
Of gold that all may share;
Unlike the gold of greed, this wealth
Is scattered everywhere.

Bridgeport, Wis.

BULK COMB HONEY IN THE NORTH.

One Sale Means Many Orders.

BY CHARLES J. GREENE.

A few years ago I became very much interested in a series of articles in *GLEANINGS* by H. H. Hyde, of Texas, on the production of bulk comb honey; and I thought that, if it were such a success in Texas, it might be made a success here. I decided at that time to test it here in New York under our different conditions, and I have been much pleased with the experiment. I have read

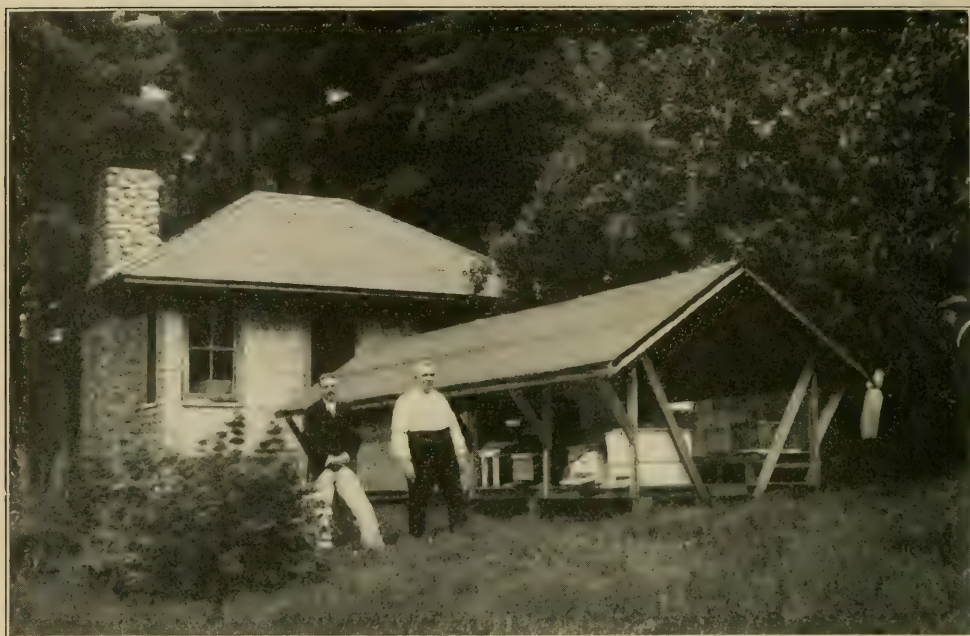
with much interest all articles touching on this subject, but I have found none that I thought were comprehensive enough.

I began on a small scale and have increased each year since, and have never been able to supply the local demand for the product. I sell in two small villages and one village of about 5000 inhabitants, also along the roads between my home and these villages. As to equipment, my hives are all regular ten-frame L., fitted with the supers designed for holding the $3\frac{3}{8} \times 5$ sections. In these supers I use eight shallow frames with thick top-bars with single groove and wedge for holding the foundation. In fact, most of my frames are the regular Hoffman, with the end-bars cut off to make them narrow. I would explain here that I use this style of frame because it is more rigid than the thin top-bar frames, and prevents all sagging of these heavy frames of honey. The wedges are large enough so they can be removed and used over and over, as they are held in place by three small wire nails. The wedges can be easily pried out with a stiff knife-blade, when the narrow strip of foundation peels right out, leaving

the groove clean for the next sheet of foundation. I use the extra-thin super foundation, either starters or full sheets, and thus secure nice, straight, thick combs of honey.

The next problem was what to use to put the honey in for market. The best thing I have found so far is the regular 5 and 10 lb. butter-pails with straight sides, which can be bought almost anywhere at a reasonable price. I have used some pails with slanting sides, but like the straight ones better. I would not use any pail having a smaller opening than the full size of the pail. I have packed a few pails for neighbors who have brought their own pails that had contained corn syrup, and had a smaller friction-top opening, and they were certainly a nuisance.

Now for the packing. I place several open pails before me on a table covered with oil-cloth, with a super of honey within easy reach. I then take a frame, set it endwise on a stick over the uncapping-tank or other receptacle, and, with a very thin sharp knife I cut along the bottom-bar, then across the top end, then down along the top-bar a distance equal to the depth of my pails (this will be determined at first by careful measurement, but after a little experience by guess); then I cut across, and, with a quick movement, place the piece in a pail with the last cut end at the top; then cut another piece and place by the side of the first, and so on till the pail is filled. If a piece is



HENRY W. BRITTON'S BUNGALOW AND APIARY AT STOUGHTON, MASS., WHERE THE MASSACHUSETTS SOCIETY OF BEE-KEEPERS WAS ENTERTAINED LAST JULY.

too thick or too thin to fit well I set it in another pail and select a frame from which a piece can be cut to fit. Sometimes I have several pails in course of filling at one time. About three or four pieces will fill a 5-lb. pail, and four or five will fill a 10-lb. pail. This leaves the clean-cut edges of the honey in view when the pail is opened. As a frame is emptied I scrape all adhering honey and burr-comb right into the uncapping-tank and set the frame back into the super. If I happen to find a frame that has had a patch of drone brood in it I either save it for extracting or cut out the piece and chip it up fine into the tank and pack the rest. We must be very careful about this so that only the finest honey may enter the pails.

After several pails are filled they are weighed; and if they do not come up to the weight determined upon we add liquid honey until they do; but we try to use as little liquid as possible.

At the beginning of the season I determine on the weight and price per pail and stick to it through the season, so all customers are treated alike, and there is no kick. In fixing the price I have to consider the price of section and extracted honey in our market, also cost of pails, and the comparative cost of producing bulk comb honey.

To make sales I load up my wagon with pails and start out. When I reach my first prospective customer I approach him something like this:

"Good morning. Can I sell you a nice pail of honey this morning?"

Then, without waiting for an answer, holding the pail I am carrying in one hand, I take off the cover with the other hand and hold it so as to bring the nice combs of honey into view. As his eyes rest on the honey his hand involuntarily goes to the vicinity of his pocketbook, and he remarks, "That *does* look nice. How do you sell it?"

The price is then stated, the money is paid, and, after a "thank you" and a cheerful "good day, you will want some more when I come again," I pass on to the next.

After I have sold a customer a pail of bulk comb honey he is sure to want more; and I have no trouble in making sales the next time I go that way. It sells equally well among the farmers and the people in town, especially the working people.

Last year I went on the road very little to make sales, as most of the orders were sent in by phone or letter, and many came directly to the house for the honey.

Chemung, N. Y.

FIELD MEETING OF THE MASSACHUSETTS SOCIETY OF BEE-KEEPERS.

BY J. M. LEWIS.

The annual field-day meeting of the Massachusetts Society of Bee-keepers was held July 23 at Stoughton, on the grounds of Mr. Henry W. Britton, who has a beautiful pine grove situated on a slope just back of his residence, half a mile from the railroad station. Automobiles were in waiting

for incoming trains to take arrivals to the place of meeting. The day was ideal, and the place beautiful. The members of the society and invited guests were heartily welcomed by Mr. Britton and the president.

We were conducted to the bungalow shown in the picture, where all were requested to register their names.

The gentleman on the right in the photo of the bungalow is Mr. Henry W. Britton, who entertained; the other, his brother, the president of the society, Mr. E. Clinton Britton.

A large number were in attendance, as shown in the group taken in the grove.

Samples of honey and bees in observation hives were on exhibition in the bungalow.

Parties were shown to Mr. Britton's house, and invited to the attic, where he has bees in observation hives, and a fancy queen that has taken several prizes at fairs, and valued at \$100. At the hour for luncheon, coffee and ice cream were served in the grove, furnished by Mr. Britton, which, if one could judge by the quantity that was consumed, was highly appreciated and enjoyed.

Meeting for business was called to order shortly after 1:30 by the president, who, in a few pleasant words, welcomed those present, and then presented several names who had applied for membership.

After the routine of business, Prof. Wm. P. Brooks, Director of the Massachusetts Agricultural Experiment Station, was introduced and gave a very interesting address on honey-plants and how to grow them.

The president, Mr. E. Clinton Britton, told how to handle bees without protection, and Mr. Henry W. Britton wore an old-time stovepipe hat with a small hole cut in the front, containing a swarm of bees which

appeared to enjoy their quarters, and seemed perfectly at home, as they were constantly going in and out as if they were in permanent quarters. The writer was obliged to leave the grounds before the program was fully carried out, but felt amply repaid for going.

North Westport, Mass.

HOW THE QUEEN MAKES THE PIPING SOUND.

BY O. B. METCALFE.

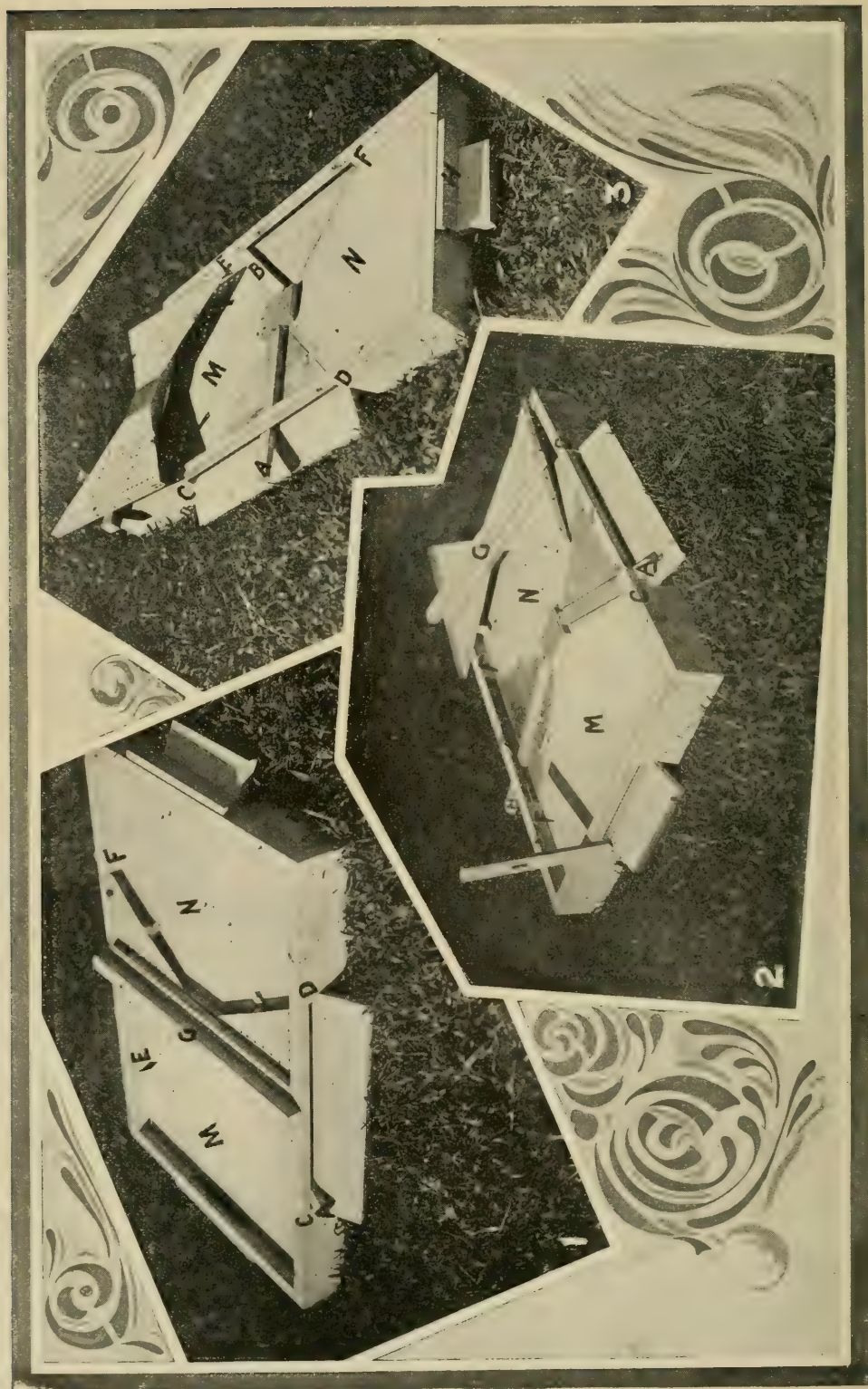
In GLEANINGS, 297, F. Dundas Todd says his friend Mr. Russell has witnessed the piping of a virgin, and that he is sure that the sound is made in the thorax. He is mistaken. He no doubt made his mistake by not being close enough in his observations. To make this piping sound the queen crouches close to the comb, stretches out her neck, and buzzes the tips of her wings. The rest of her wings she seems to hold still and perfectly rigid. Nor does she spread them out, but holds them as in a crawling position. Almost any bee-keeper with real good eyesight can settle this question for himself by taking some old queen he is about to kill, and, in the heat of the day, when there is a good honey-flow, placing her on a frame of bees and brood from a strange hive. I have noted that about one out of ten will begin the piping within a minute. I believe she makes the sound when frightened.

INTRODUCING A VIRGIN TO A LAYING-WORKER COLONY.

On page 466 the question is asked whether laying workers will not fly back a hundred yards if shaken out with the rest of the bees that far from the stand. I have practiced



ANNUAL FIELD MEETING OF THE MASSACHUSETTS SOCIETY OF BEE-KEEPERS, STOUGHTON, MASS., JULY 23.



J. E. HAND'S DOUBLE BOTTOM-BOARD FOR CONTROLLING SWARMING, MAKING INCREASE, ETC.
By means of the levers A and B the flying bees may be switched from one hive to another.



FIG. 4.—HAND'S BOTTOM-BOARD IN OPERATION.

this plan, and I think it practical at any rate.

This reminded me of the plan Mr. Pritchard mentioned, of introducing queens by shaking the bees out in front and running the queen in with them. If, some time, a bee-keeper finds more than one virgin in a hive, as he often will, or if he has virgins on hand and he knows of a hive in the yard with a laying worker, he can kill two birds with one stone by shaking the bees all out of their hive some 75 or 100 yards away and running the virgin in with them as they return. It is not a sure way of introducing a virgin in such a hive, but it is the best plan I know unless a ripe cell is given in a protector.

Mesilla Park, N. M.

PERFECT CONTROL OF BEES WITH ECONOMY OF LABOR.

A Double Bottom-board Having a Switch Capable of Shifting the Bees from One Hive to the Other.

BY J. E. HAND.

For generations the outside world has looked upon bee-keeping as a hazardous pursuit, and these outsiders can hardly be blamed for entertaining such erroneous ideas when up-to-date bee-keepers acknowl-

edge their inability to control the swarming impulse of bees with any thing like economy of labor. When bee-keepers learn how to control their bees by economical labor-saving methods, the pursuit of honey-production will stand upon a solid basis as compared with other business ventures.

As many of the readers of this journal already know, the writer has for several years been engaged in an earnest endeavor to solve the problem of swarm control with economy of labor. Our efforts have not been in vain; for after much experimenting along many lines we have at last discovered principles by which bees may be controlled with the same precision and certainty that the expert engineer controls his engine, and with an economy of labor that renders the new system well nigh automatic in operation. Results that formerly necessitated an almost endless routine of shaking and brushing bees, interchanging hives and brood-chambers, clipping queens, etc., are now obtained in the highest state of perfection in a much easier manner.

The simple equipment is incorporated in a bottom-board, Fig. 1, which is adapted for use with any hive having a loose floor. This bottom-board is double, and wide

enough to accommodate two hives side by side separated by a one-inch strip. A rim around the outside forms a one-inch space under the frames. On each side, centrally located, is a main outside entrance, $\frac{1}{2} \times 12$ inches, CD and EF, Figs. 1, 2, and 3, each leading through a short covered passageway to two inner entrances, each having a capacity equal to the outside entrance. These inner entrances are opened and closed by switch levers, A and B, the inner ends of which are pivoted to the bottom-board, and work in a socket in each end of a central "frog," the outside protruding from the main outside entrances.

When a switch-lever is thrown either way from a central position the inner entrance to the hive on that side is closed while the one to the hive on the other side is opened without changing the position or appearance of the outside entrance, as this is always open full width.

Fig. 2 shows the "switch-board" with the covered passageway, G, removed, showing the position of the switch-levers A and B, and the central "frog."

On each end, centrally located, is an auxiliary entrance $\frac{1}{2} \times 6$ inches, provided with a cut-off, I, Fig. 2, to be opened and closed as occasion requires.

Fig. 3 shows one of the auxiliary entrances closed with stop H, also the covered passageway turned bottom side up, showing the ventilating-holes and the feet upon which it



C. C. SCHUBERT'S APIARY, SEPELVEDA CANYON, CAL., DESCRIBED BY MRS. ACKLIN, AUG. 1, PAGE 477.

rests when in position. The equipment is the same on both sides, and is always in position ready for instant use. It does not in the least interfere with the free passage of the bees, nor conflict with any manipulation by the apiarist. To render the equipment doubly effective there is a system that goes with it which will be described in another article.

Perhaps a bit of history relative to the colony shown in Fig. 4 may be of interest. This colony was placed upon the switch-board June 18, having previously developed the swarming fever to the highest pitch. On the day mentioned, it cast a swarm which, having a clipped queen, returned, and with it a part of two other swarms that were out at the time, the hive being completely covered with bees. In this condition it was placed upon a switch-board. The next day the field bees were shifted over into an empty hive by the new system. Ten days later the swarm thus made was reinforced by another shift. At the close of the harvest, July 12, the field bees were shifted back into the original hive, and worked for cell-building the rest of the season.

At the time the picture was taken, July 30, the five supers on this hive, as well as the one on the hive by its side, were chock full of beautifully white-capped honey built from foundation, making 100 per cent increase and 150 lbs. of honey, all within 25 days, which is not so bad when we consider that the yard contained 200 colonies, spring count, with a far from good location. The time spent in manipulation did not exceed ten minutes aside from putting on supers.

This colony is a fair sample of all the others that were worked by the new system, which shows what may be done with bees by applying correct principles in harmony with their instinct, which is the magic key that will unlock the doors of every avenue that leads to the perfect control of bees with economy of labor.

Birmingham, O.

(To be continued.)

A SELF-MEASURING FAUCET FOR HONEY-TANKS.

BY JOHN G. COREY.

Thirty-five years ago, when I became a producer of extracted honey by the carload, I found that the largest syrup-gate to be procured in the market would not allow a ton of the heavy honey we were producing in Ventura Co. to pass through it in less than three hours. This slow process not being satisfactory I availed myself of my knowledge of labor and time saving appliances by procuring a measuring faucet made by the Enterprise Mfg. Co. With this device I could draw off and ease up a ton of heavy honey inside of an hour. The faster the crank is turned, the shorter time is required to fill the can. The dial is adjustable; and if the can, as it comes from the factory, should hold a pint or a quart over or under the 60 lbs. desired, the dial can be moved to zero for each can, and five-gallon cans can be filled rapidly, and so as not to vary four ounces each for the whole crop.

Santa Barbara, Cal., Sept. 27.

BEES KEPT IN A TOWN WITHOUT ANNOYANCE TO NEIGHBORS.

BY ARTHUR RHOADS.

The apiary shown in the engraving is in the heart of the town, and the bees have never given any trouble to any one. The colonies are all in standard eight and ten frame hives, each group of five resting on cement bases, which have proved to be very satisfactory.

Coyle, Oklahoma.

WHAT IS THE PROPER PACKAGE FOR RETAILING HONEY?

BY GEORGE SHIBER.

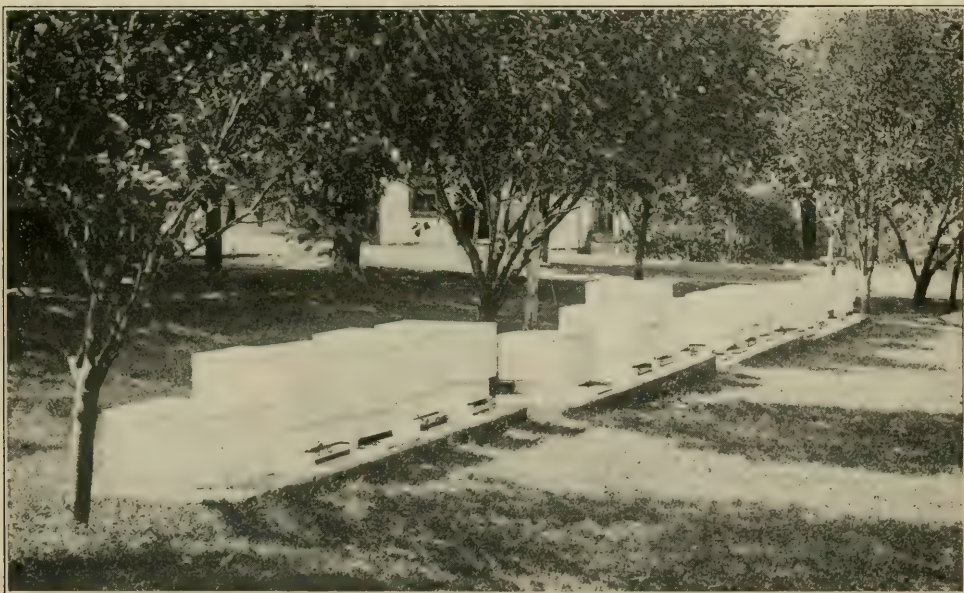
There has been a good deal said lately on the subject of selling and extracting unripe honey. I feel that this is important, and personally I wish that the time might come when not an ounce of honey could be extracted until ripened. Honey should weigh about 12 lbs. to the gallon. What happens to honey when it leaves our hands? For instance, a man buys a gallon of honey in a pail without a cover. Perhaps he tries to keep it covered up; but, after having it a few weeks, it absorbs a little moisture, then the flavor is gone. A year or so ago I sold one party about 25 lbs. of honey, putting it in a tin water-pail which he brought for the purpose. A few months later this man told me that the honey had soured; and after some questioning I discovered that he had put it in a cellar with a single thick-

ness of newspaper over it. Of course, honey would sour under such circumstances. Lately, I am in the habit of impressing every customer with the great importance of keeping the honey sealed up air-tight *all the time*.

THE 60-LB. CAN TOO LARGE.

I am coming more and more to the belief that the 60-lb. can is too large for family trade. In the first place, it is no easy task for an inexperienced person to pour out a pound or so of honey from such a can; and if a good big lot does not drizzle out on the carpet or floor it is a wonder. In time the operation of getting the honey out of the can comes to be dreaded. Then when the honey is about two-thirds gone the rest will have candied; and in order to liquefy it a wash-boiler has to be utilized. In view of all this the chances are that the consumer will no longer bother with it; and next year, when he is approached by the bee-keeper, who wants to sell him another can, he refuses, for the reason that he still has some of that purchased last year. Sixty pounds at one time is too much for the average family. They get sick of the honey before it is gone. Honey is good to eat, as scripture informs us, but we should not stuff our customers until they are sick of it.

Well, after having had the above experience I finally began using the one-gallon tin cans holding 12 lbs. I charge 10 cts. per lb. to every one, and sell the gallon cans for \$1.30 each to cover the cost of the can. I am quite sure that I could get \$1.35 just as easily. Anyhow, if we do not ask a price somewhere near what an article is worth, we certainly won't get it. The gallon can has given the best of satisfaction. I never agree



CONCRETE SLABS AS FOUNDATIONS FOR FIVE HIVES EACH.



KELLY M'LAUGHLIN'S RESIDENCE AT HALF DAY, ILL., THE WALLS OF WHICH CONTAIN MANY COLONIES OF BEES.

to take the can back for 10 cts. I tried it, but have quit doing it, the objections being too numerous to mention. Many people, when told that they may bring the can back and get 10 cts. for it, will want to give only \$1.20 and then agree to bring back the can. Perhaps most of them will do it, but the cans are often unfit for further use.

Twelve pounds is not an extravagant amount, and this will soon be gone, so that they will become honey-hungry again and want more. Honey is cheap food too. I notice that one of the leading mail-order houses in Chicago charges \$1.58 per gallon for white honey.

AN EASY WAY TO RE-QUEEN.

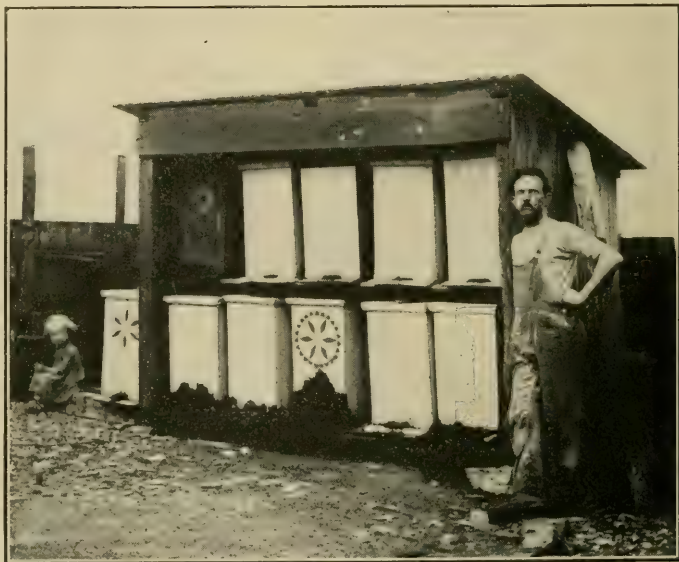
Many times, when I wish to requeen a poor or otherwise objectionable colony, the bees make way with the new queen before she begins to lay. I am satisfied that the old bees are at fault. So, at the close of the clover flow or during the fore part of August, after having destroyed the queens of such colonies as I wish to requeen, I carry the hive

to a new location. The next day I give a cell, a virgin, or laying queen, and in either case I find that the queen has commenced to lay promptly on time, so that the colony is in first-class shape for winter. It is true that the flying force is lost; but such bees will occupy some hive near by, and gather as much fall honey as though they had worked in their own hives. I follow this plan with all colonies to which

I wish to introduce purchased queens. The old bees are not of very much use after the flow is over, anyhow, and they certainly make bad work when an attempt is made to introduce a new queen.

Randolph, N. Y.

[We use honey in our home constantly, so we surely practice what we preach. It is



C. J. DIEHL'S SHED APIARY OF BOX HIVES, STETTLERSVILLE, PA.

surprising how quickly a one-gallon can is emptied; the contents do not have a chance to candy. But with the 60-lb. can, the last of it goes very slowly, for it is either candied or so nearly solid that it will not run out.—ED.]

A HOUSE FULL OF BEES.

**Migratory Bee-keeping on the Mississippi River
25 Years ago.**

BY J. L. GRAFF.

Sometimes we find some queer habitation of bees and some unexplored depositories of honey. Up to this time no one knows just how many colonies of bees nor how much honey is sheltered by the tumbledown house shown in the accompanying picture. It is the home of Kelly M'Laughlin, at Half Day, Lake Co., Ill., and he and the bees have the whole place to themselves. Years ago the bees began making their home in the old house, getting in through knot-holes and apertures caused by breakage of the weather-boarding. Old timers say that the bees have been at work in the place for eight to ten years. There have been swarms and considerable excitement at times, but no one has interfered with the little workers.

Kelly lives alone in the house. Some of his friends have endeavored to induce him to investigate, believing that a great quantity of honey is stored in the place; but he will not allow the bees to be disturbed nor any of the honey taken away. However, it is now claimed that the place has been sold, and the new owner may have different ideas about the matter. The whole neighborhood is curious to know what the outcome will be. Many claim that the bees have stored honey sufficient to meet only their wants, while other knowing ones stick to it that the honey-makers have allowed no rich bloom to go to waste.

There is another house at Ivanhoe, which forms a hive for bees, and there are like conjectures as to what an investigation might reveal.

One of the most interesting exhibits in this same region of Lake Co. is a picture in the home of A. Grabbe, at Libertyville. The picture shows two large coal-barges fitted out with five decks each. The barges formerly were used to transport coal from Pittsburg down the Ohio River to lower Mississippi points. They were rebuilt for a honey-gathering expedition, and each barge held on its five decks no less than 1000 colonies of bees. Back of the barges is shown a powerful steam tow-boat.

This expedition was fitted out more than twenty-five years ago by C. O. Perrine, Mr. Grabbe being associated with him in the venture. The project was to move the barges along the banks of the Mississippi River at night and stop near rich fields of bloom through the day. On the upper Mississippi the bees worked on basswood

and clover; but on the lower river they had to depend on the willows that lined both banks. Mr. Grabbe says that, while a great quantity of honey was gathered from this region in later years, the boat project did not pan out, and it was tried but one season. It was unfortunate that they got started five weeks behind the season, and the expense of keeping and paying and feeding two full steamboat crews brought the projectors out at the little end of the horn. The willow product had to be mixed with corn syrup in order to make it palatable at all. But on this trip, which cost more than \$20,000, the possibilities of the region were found out, and, later on, large shipments of bees were made by rail to several different localities from which a paying quantity of honey was gathered. Mr. Grabbe for years engaged in the bee business, and is one of the best-known apiarists in Illinois. He is now the owner of a fine flowing well of water from which he supplies hundreds of householders living along the north shore of Lake Michigan.

Ravenswood, Ill.

WINTERING COLONIES IN BOX HIVES INSIDE A SHED.

BY GEO. H. REX.

The hives shown in the engraving are owned by Chas. J. Diehl, of Stetlersville, Pa. Mr. Diehl makes his own hives, which are very large, with a removable floor in the middle. Frames are used in the lower part, which is the brood-chamber; but no foundation is put in, hence the combs are built irregularly to such an extent that the frames can not be removed.

In the back of the hive is a pane of glass as large as the brood-chamber, covered with the wooden back of the hive, which is hinged to the main part. Ordinary sections are placed in the upper portion of the hives for comb-honey production. Mr. Diehl's crop this year was good.

Stetlersville, Pa.

REPORT OF THE NATIONAL BEE-KEEPERS' CONVENTION.

**A Large and Enthusiastic Meeting Held at Albany,
N. Y., Oct. 12, 13.**

BY W. A. SELSER.

WEDNESDAY MORNING.

The first session of the convention was called to order at 10:45 by Pres. Geo. W. York, with 250 delegates in attendance. It was the largest meeting the Association has ever had, with the exception of the one at Detroit in 1908.

General Manager N. E. France allotted numbers to the various members. After this a paper was read from Mrs. S. Wilbur

Frey on the subject, "What a Woman can do with Bee-keeping."

The next paper was by F. B. Cavanagh, of Hebron, Ind., on the subject, "Bee-keeping as a Business." This created quite a discussion, Mr. W. L. Coggs shall claiming that he could make a living with bees without any trouble. Wm. Coswell, Jr., stated that he took \$1000 worth of honey from 140 colonies, one colony yielding 165 lbs. of fine comb honey. Mr. J. E. Crane said that bee-keeping as a business paid better when extracted honey is produced. Texas was considered the most successful State for conducting bee-keeping as a business. Meeting adjourned at 12:10.

WEDNESDAY AFTERNOON.

The afternoon session was called to order by Pres. York at 1:50. Mr. Orel L. Hershisser was appointed chairman of the Committee on Resolutions; J. E. Crane, chairman of the Committee on Nominations; N. D. West, chairman of Committee on Rules. By the way, the following rules were submitted for conducting the convention: First, that members only should take part; second, that they should take part but once; third, that the president should judge the time to be taken by each member.

J. L. Byer read a paper on the subject, "Extracted Honey from Nectar to Market." Mr. Byer is a very bright fellow, and his paper was good. He said in part: It is better to raise extracted honey for table use instead of for manufacturers, as better prices are realized. Strong colonies are essential. Full sheets of foundation should be put in within a day or two of the time they are to be used, as foundation deteriorates when placed in the frames too far in advance. Supers should be tiered up four or five high, as one super does not give the best results. Honey should always ripen on the hive. The suspicion of extracted honey is fast disappearing. Mrs. Byer uncapped 30,000 lbs. of honey herself last season.

The following points were brought out by a discussion. By agitation dealers can be induced to handle more honey. Glass increases weight, but is better than tin. It is advisable to sell honey by the dollar. (One party said he sold 7 lbs. for one dollar.) If one can not get more than seven cents for honey he had better quit the business. Never cut under a competitor in the open market.

The next paper, "Bulk Comb Honey and its Future," by Louis H. Scholl, was read by a stenographic reporter, as Mr. Scholl was not present. Texas goes ahead on the matter of bulk comb honey, which is forming a new era in bee-keeping. This State has also made some rapid strides in the last year in putting up honey in jars with comb in the center. The long narrow jars are better, for by their use much more of the comb shows. This paper was discussed very generally. Mr. Harry Lathrop was in favor of bulk-comb-honey production in any locality. He said that honey heated and then

strained would not candy quickly. Mr. Hershisser thought location a very large factor.

A paper, "Ripening Honey on Hive," by W. P. Southworth, was read by N. E. France. Mr. Southworth thinks it wise to leave honey an entire season on the hives, as it is well ripened and better flavored at the end of the season. Flavor is a very important factor, and can be obtained only after months of ripening. A humid atmosphere causes honey to ferment and spoils its flavor. Unripe honey should be placed in a large tank and drawn off from the bottom.

WEDNESDAY EVENING.

President York asked Vice-president Wright to preside at the evening session. Mr. York read his address, in which he made some recommendations that created quite a lively interest; in fact, the sentiment of this address pervaded every session that followed. The following, in brief, are some of his remarks: The twelve members on the Board might easily be cut down to five, as it takes too long for the General Manager to write these various directors to protect bee-keepers against the law. This is not so necessary as formerly. To prevent adulteration is also not necessary, as the pure-food law attends to this. The essential thing is to promote the interest of the bee-keepers. State associations should be branches of the National, and not independent as they are now. Each State should elect one or two members, and the committee thus formed should be the law-making body of the whole, the expenses being taken out of the general fund. Minor matters, such as honey production, marketing honey, etc., should not be discussed at the National convention. Co-operation in marketing honey, however, would be a very profitable theme for discussion. At every State meeting there should be a member of the National Association present. One good energetic man should be employed to give his whole time to organizing bee-keepers — unless something like this is done there might be a new national association promoted to take the place of the present one, and this we should not like to see, so we must be progressive. There should be a good lecturer on the road to tell the people something about bees and their value, and also to advertise honey. There should be a National brand on every package of honey put up by its members. The man who gives his whole time to the work should know the condition of every large market in the United States. At the present time, some of the markets are overloaded while others are short. This paper called forth tremendous applause.

Mr. J. E. Crane, chairman of the Committee on Nominations, called a meeting of the Nominating Committee, which was composed of one member from each of the twelve States represented, the writer representing Pennsylvania. The following nominations were announced: For President, Geo. W. York, N. V. Facey; for Vice-president, W. D. Wright, Thos. Chantry; for Secretary,

Dr. Burton N. Gates, E. B. Tyrrell, Louis H. Scholl; for Directors, H. A. Surface, James A. Stone, Robt. A. Holecamp, Orel L. Hershisier, F. Wilcox.

Mr. S. D. House read a paper on the subject, "Comb Honey from Nectar to Market." Among a good many things he said: Strong colonies, good appliances, and contentment of bees are necessary. Keep the colonies large. Give the fourth super, taking away the third when putting on the fourth. Fumigate with carbon bisulphide. Mr. House also explained his plan of using the wire separators.

The next was an address given by F. H. Cyrenius, on "The Comforts and Conveniences of an Apiary." Mr. Cyrenius showed a number of little kinks of his own get-up, one being a bell that would ring when a 60-lb. can was filled with honey. He also demonstrated how to overcome robber bees by working under an umbrella tent. He has a large 5-ft. wagon-umbrella with mosquito netting all around, which he carries with him and sticks into the ground when he wants to work over a hive. He suggested painting all tools white so that they may be easily found when mislaid.

Geo. B. Howe read a paper on the subject, "Selection in Breeding to Increase the Honey Crop." Drop the question of beauty and breed for honey-gathering qualities only. Italian bees are the best. The varying vigor of the bees in the honey-flow makes a difference of many hundred dollars in a large apiary. Some will fly in the rain, and when it is cool, while others will not. The size of the wing is also an important factor. Many bees do not fly half as far as others. Stick to the dark Italians. (I considered this paper among the best read.)

THURSDAY MORNING.

F. J. Root read a paper entitled "Advertising to Create a Larger Demand for Honey." The output could be increased sixfold if properly advertised. Five thousand members might pay three cents per day, and this amount used for advertising each year. Show-windows should be filled with attractive glass and comb-honey packages. Honey should be sold from a wagon in the streets. This subject was discussed by Mr. L. C. Root, James A. Stone, P. H. Elwood, and others.

A paper, "Co-operation Among Bee-keepers," sent by Mr. F. Rauchfuss, of Denver, Colo., was read by N. E. France. Mr. Rauchfuss compared the price of honey with bee-supplies 23 years ago. He said that in 1887 sections were \$4.00 per 1000 and shipping-cases \$6.00, while in 1910 sections were \$5.50 and shipping-cases \$9.00. He thought that, since bee-keepers got twenty per cent less for honey than the price 23 years ago, the members should not be compelled to buy or sell supplies unless some advantage could be shown by it. I replied to this paper by stating that there was surely a misunderstanding somewhere, as it was not true that supplies had increased while honey had

decreased. I stated three examples. Fifteen or twenty years ago I bought a car of buckwheat honey at 3½ cts., while to-day two cars sold at 7 cts. At the same time, I bought in Wisconsin fancy white-clover extracted honey in barrels at 5½ cts., and at the same price contracted for several cars. The bee-keepers at that time had not been getting over 4½ to 5 cts. for the same honey; to-day that same honey brings 8 to 8½ cts. I remember buying good comb honey some fifteen years ago at 12½ and 13 cts., that same honey to-day bringing 16½ cts. Mr. Hershisier replied to my statement by saying that, years ago, he could buy a horse for \$40.00 and wheat for 43 cts. a bushel. Now, while farmers and bee-keepers still need horses and wheat, they have to pay several hundred dollars for one horse, and over \$1.00 a bushel for wheat. Relatively, honey does not bring nearly as much as it did, because a pound of honey does not buy as much for the bee-keeper. Mr. Weber supported my remarks, and then asked the president to call on Mr. Segelken, who had come in about an hour before. Mr. Segelken also endorsed and emphasized my remarks.

Mr. Orel L. Hershisier made quite a report on the president's address, the practical outcome being that it was referred to the Board of Directors for action.

Dr. Burton N. Gates spoke of the disintegration of the National Association, and said that we should make it more educational in its nature. This created some discussion, Mr. Hershisier saying that the Association had made many rapid strides in the last few years.

Mr. James A. Stone described the best foundation for a bee-hive.

Charles Stewart was called on to give the best treatment for foul brood. He said that, sooner or later, this disease would reach every apiary in the land, and he claimed that keeping the colonies strong and using the dark Italians was the best advice he knew of in a general way to give to bee-keepers. He did not mean that, in this way, foul brood would be eradicated, but that it would be a large factor in keeping it in check. He explained by saying that foul brood first starts in an apiary by the bees becoming weak in vitality as well as in numbers. The weak colonies should be united, and thus got rid of. Black bees are poor caretakers. Mr. McEvoy also said that Italianizing is the best single remedy he knew of. Mr. West advocated giving a colony a new Italian queen when treating disease.

THURSDAY AFTERNOON.

Mr. Hershisier's former report on the president's address was supplemented by another report at the opening of this session. It was recommended that the Board of Directors use the funds of the Association in organizing county and State associations; that the directors take immediate measures to carry out the various recommendations in the president's address. It was also rec-

commended that the report of the National convention be put in more condensed form, boiled down, and reduced in size. It was urged that the directors recommend a change of constitution wherever it may be necessary to carry out the president's recommendations.

The Resolution Committee thanked the council chamber and the sexton, as well as Mr. M. D. Wright. There was a resolution of sympathy in case of the sickness of W. Z. Hutchinson and G. M. Doolittle. It was recommended that the General Manager's salary be increased. It was resolved to urge Congress to forbid the increase of freight rates on honey. Another resolution recommended changing eight pounds of honey to the gallon to twelve pounds, which is the national standard.

Mr. F. H. Cyrenius, in a paper, "When and How to Requeen with a Fall Honey-flow," suggested several ways of getting better queens.

In the paper by Wesley Foster, on the subject, "Methods of Retailing Honey," it was claimed that individual families could use 120 lbs. of honey per year, and a house-to-house canvass was suggested, orders being taken through the grocers. Demonstrations in stores with a good window display were also recommended.

A paper from J. J. Wilder, on "Southern Honey Production," was read. In this was mentioned saw-palmetto, mangrove, and several other of the chief sources of Southern honey. Mr. Wilder thought that bee-keeping in the South was growing. He also stated that in the South most of the honey might be sold right on the ground.

Mr. J. E. Crane spoke of feeding bees between fruit-bloom and clover. In 1910 he said he fed 1000 lbs. of sugar and 500 lbs. of honey, and feels sure that in feeding this amount he realized from 15,000 to 20,000 lbs. of honey.

Invitations for the next meeting were received from Ontario, New York, and Minnesota.

A STAND THAT WILL KEEP ANTS OUT OF HIVES.

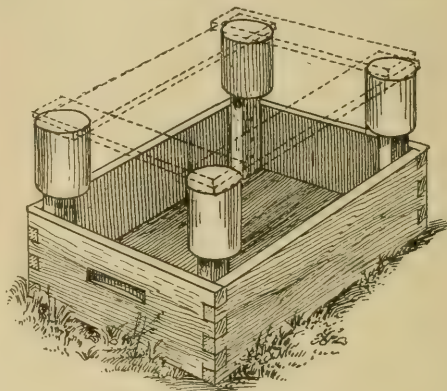
BY J. M. CALDWELL.

To the numerous inquiries as to how to keep ants out of hives, why not take Josh Billings' advice as to bedbugs—"just kill 'em all"? The best way to kill ants is with the oft-repeated remedy, i. e., bisulphide of carbon. However, there are places which, for one reason or another, it is almost impracticable to kill off the ants; and then the apiarist needs a hive-stand that will exclude them.

The engraving shows one of my hive-stands complete and ready to have the hive placed upon it. It is nothing but a table turned upside down, and an empty tomato-can, with the top melted off, inverted over each table-leg. The ants can crawl up the table-leg and all around on the inside of the

can, but they can not make the turn around the lower edge of the cans, and come up on the outside of cans and thus reach the hive.

The space between the table-legs and inside of cans must be at least half an inch; but the cans rest on the ends of the legs.



HOW TO MAKE IT.

Just take an old super or box. Cut four pieces $2 \times 2 \times 12$, and nail one in each corner. Round off the projecting edges, then melt the tops off from four tomato or peach cans (3-lb. cans are best); then invert a can over each leg and nail cross-pieces on top to brace the legs with, and for the hive to rest on; but be very careful not to allow any holes in the sides of the cans that the ants can crawl through. This works on the same principle as the tin pans used on posts under cornerbibs to keep out mice—no patent on it either.

Putting the legs of the stand in basins of water or oil will drown the bees when the wind blows, and they miss the alighting-board and fall down at the corners. At one time I had fifty hives on stands with the stand-legs in water. I also tried oil.

Here is something which I have never seen in print. Ants carry out the queen, bees, and eggs from the cells. A few years ago the question was being discussed in GLEANINGS, "Do bees transfer eggs from one cell to another?" That gave me an idea, as I was having trouble with the ants in the hives, bees cross and not doing well; and I thought if bees could transfer eggs may be the ants could too. So I went to watching them, and, sure enough, they were carrying away eggs as well as honey. No wonder the bees were cross!

Yzabel, Mexico.

How to Keep Ants Out of Hives.

You are asked, now and then, how to keep ants out of hives. This is my way: I keep a bucket of Beaumont oil in the bee-yard, with a paint-brush in it. When I find ants bothering a hive I brush the oil at the lower edge of the hive and on the bottom-board. The ants crawling around on the hive I dab with the brush; and the oil which adheres to the bristles will kill them. This makes a white-painted hive look a little bad; but it is better to have the hive-body look bad than to lose the bees. Oil is cheap, and the work is done quickly.

Fort McKavett, Texas, July 30.

J. A. RUFF.

Heads of Grain

from Different Fields

Investing in a Good-sized Apiary at the Start.

I should like to ask Mr. A. I. Root a question. I have been keeping bees in a small way for twenty years. I like them, and have read GLEANINGS and other bee-publications for a long time. Now, Mr. Root, would it be a safe investment for me to put \$500 in bees? Could a man with just himself and wife make a living with 100 to 150 colonies if the location is good? I understand the man and location are every thing.

Sandwich, Ont., Sept. 20.

ELI E. WRIGHT.

[Many thanks, my good friend, for the confidence which you seem to have in A. I. Root. In answer to your question I would say, by no manner of means put \$500 into bees to start on—that is, unless you have had a good deal of experience in managing a large apiary. Years ago my neighbor, E. B. Rood, down in Florida, wrote and asked just about the question you propose. I told him to begin on a small scale and build up as he got experience, and not think of investing heavily at the outset. Well, that was years ago. A few days ago he told me he had felt indebted to me all his life for that advice, given when it cut off the prospect of selling him a lot of goods at that time. He now has half a dozen out-apiaries and several hundred colonies, and is doing a good business with bees; but if he had invested as he thought of doing when I gave him that advice, he said it would, without question, have ended in disaster.—A. I. R.]

A Virgin of a Superseding Colony Going into the Wrong Hive.

I have a colony which has superseded its queen. Last evening I found a virgin dead in front of another hive, and this morning the bees of the superseding colony were running about in front of the hive, acting as if queenless. Now, my bees have stopped rearing brood, so how can I tell for certain whether they are queenless? I can find no cells nor young brood in any hive.

Westfield, N. Y., Sept. 30.

F. L. WHEELER.

[It seems reasonably clear that the virgin queen, when she left the hive of the superseding colony to take her wedding-flight, on returning went into the wrong hive and was killed. This, of course, left her colony queenless. In all probability—in fact, we may say you could be reasonably certain that the superseding colony is now hopelessly queenless, unless, indeed, you could find that the old queen is there, which is hardly probable, considering the behavior of the bees.

We would advise introducing a laying queen, which you can get through the mails. Introduce in the regular way except this—that, when she is released, watch the behavior of the bees toward her. If they ball her upon releasing, after she has been caged for three or four days, the presumption is that the old queen is in the hive. But before you send away for a queen look the hive over several times, taking an hour for it in the forenoon and perhaps an hour in the afternoon. If you do not find any thing that looks like a queen you may rest assured that the colony is queenless.—ED.]

The Efficiency of Different Races Depends on Locality.

Our season was one of disappointments. The early spring gave the bees the best start ever known, and we had visions of supers piled high. However, during fruit-bloom and white-clover season the colonies were on the point of starvation, and for six weeks death stared the bees in the face. Since that time there has been a wonderful change, and we have had to hustle. Some of my Banat colonies are in their fourth super of 32 sections each, the sumac and buckwheat being in full blast, with goldenrod and asters to follow.

Our locality here is wooded, a strip from ten to fifteen miles wide extending from the Massachusetts line, and running on the eastern border of

Connecticut and the western border of Rhode Island to Long Island Sound. It is what might practically be called a wilderness. Bee-keepers here have tried the Italians, but have largely discarded them. Moreover, it is the common expression of bee-hunters that they never find an Italian colony with any honey worth mentioning. My blacks and their near cousins are, as usual, leaving the Italians far behind. On the other hand, it is highly probable that for the West, and open countries, and where the nectar sources are more abundant, the Italians certainly do excel. If it were not so they would be discarded as a matter of course. If the Italians paid as well I would keep no others, for I love to see those beautiful yellow bees.

Oneco, Ct.

T. B. MOWRY.

Wintering Outdoors in Wisconsin.

Last spring I bought thirty colonies of bees, and I want to know how to winter them outdoors. I am accustomed to bees, but I never could make a success of wintering. The bees are in double-walled hives with four-inch space all around. Each hive has a four-inch super, packed with sawdust, also the flat summer cover. Which would be preferable? I can make a Hill device of barrel-hoops, to put under the sawdust cushion, if needed, and then put a cloth or paper over that.

Would it be desirable to contract the brood-chamber at the risk of leaving too small an amount of honey in the hives? Each hive contains about 40 lbs. of honey now.

Evansville, Wis.

R. W. STANDISH.

[We do not believe that you will have much difficulty in wintering those colonies if they are in the condition you say they are. It would be well, however, to select a place that is sheltered as much as possible from the prevailing cold winds. If you have had difficulty before in wintering outdoors it might be that the stores were not of good quality. If the honey is dark and of inferior flavor, it might be best to extract it and substitute sugar syrup.

Here in Medina we use sealed covers—that is, thin super-covers under the chaff-tray. Usually a more porous packing than sawdust such as chaff, planer-shavings, or ground cork is to be preferred.

It depends upon the size of the colonies whether any contraction is necessary. It does not pay to winter a weak colony on more combs than the bees can cover well. It is best to err on the safe side, and have too much honey in the combs rather than not enough.—ED.]

Screening Hives in a Cellar.

My bee-keeping experience has just started. I have twelve colonies in No. 1 condition for another year. I want to put them in my cellar this winter. I have a furnace; and the vegetable-room, where I should like to put the bees, is dry, having a temperature of about 45°. Would it be advisable for me to put a wire screen over the front of the hives so as to keep the bees in? I do not want to let them out in the cellar.

Leonardsville, N. Y.

C. L. CRANDALL.

[We believe that this room will be a suitable place for your bees, but we would not recommend the use of wire cloth over the entrances. We have tried this plan quite thoroughly, and we have found that the results are far from satisfactory. If you can control the temperature of the cellar, and see that the air is fresh, we do not think the bees will bother you to any great extent about leaving the hives; but it will be necessary for you to have the room darkened.—ED.]

Combs of Honey versus Sugar Syrup for Winter Stores.

I find that my brood-chambers are almost empty of honey, the bees placing practically all of it above the excluders in the supers. For winter would you advise me to feed sugar or to use sealed combs, of which I have a plenty?

When would be the best time to put the sealed combs into the brood-chambers?

How would it do to winter in two ten-frame bodies, leaving the empty combs in the lower one, and having the sealed honey in the upper one?

Poltimore, Quebec.

R. R. RABB.

[It would be all right for you to insert the combs of sealed honey, as honey is necessary in your hives for winter; but unless you have no extractor, and

therefore no way of disposing of the honey profitably, we should think that it would be cheaper for you to sell the honey and to substitute stores of sugar syrup. There is nothing better than good sugar syrup for winter, and it is best to feed the best granulated sugar mixed with about one-third its volume of water, warmed enough so that it will dissolve readily, but not boiled.

It would not be too late to put in the combs of honey the latter part of October provided the bees have enough to live on until that time. We have found that late feeding gives very good results if the syrup is warmed so that the bees take it readily.—Ed.]

How to Pack Bees in a Car for Moving a Long Distance.

I have to move 609 colonies of bees by rail, and by the route we take they will be in the cars three days. We will screen the top, and have an empty super on for the bees to cluster in. The brood-nest is full of honey, 40 or 50 lbs. Shall we leave the bottoms on and screen them, or just screen the entrance? Tell us all about shipping bees by the carload, watering them, loading them in the car, and how you brace them to keep them from moving about. You will know what information we want. The bees are all in Root dovetailed hives complete. Maxwell, Texas, Oct. 3. M. E. VANEVRY.

[We would advise putting on screens only at the top. An entrance screen may or may not be necessary. We advise a screen, both top and bottom, when the weather is hot and the bees are put in a close box car. If some of your colonies are very strong it may be advisable to use a screen at the top and bottom; but an empty super with top screen only, we think, would be amply sufficient for this time of the year at least.

Where so many colonies are shipped it is very necessary that a man go along with the bees. He should be provided with a watering-pot and several square cans of water. If the bees cluster closely on the wire cloth they should be sprinkled. This will drive them off, so that the bees from below can get air.

The hives should be piled one above the other, but in such a way that there will be at least a space of five or six inches between each tier of hives. More space would be better. If possible the aisles between the rows should be so disposed that a man can get to any one of the individual hives. If you can not provide more than about a space of four or five inches between the tiers of hives we would advise taking along a spraying-pump having a small hose attached, so that a stream of water can be directed between the tiers. There is no need of using water unless the bees cluster closely on the wire cloth.

The hives should be securely braced in the rows, and each row should be secured to the other rows by means of cross-ties.

It is very important that the hives be so placed that the frames, if not wired, will be parallel with the rails. A hive can stand a bumping shake endwise better than it can sidewise. If the combs are securely wired and the frames self-spacing, it won't matter very much how the combs stand with reference to the rails.—Ed.]

Pointers on Public Demonstrations.

As I am now making my wire cage for my apiary demonstration at the fair to be given in Winamac, I find it necessary to ask a few questions.

1. The colony of bees will be located in the middle of the street, on a platform, for four days. Shall I leave the top of the cage open except when I am making the demonstration, or would you leave it open at any time?

2. Would you use an extra-strong colony, or just an ordinary one?

3. How many bees in a pound?

4. How many bees in an ordinary colony of Italians?

Winamac, Ind., Sept. 16.

M. E. BOND.

[1. The top of the cage should be closed when making demonstrations before the public; but in bee-yard work the top may ordinarily be left open.

2. A medium-sized colony is better than an extra-strong one, for the reason that it is easier to find the queen. We usually use nothing larger than a three-frame nucleus.

3. The number varies according to circumstances. If the bees have little or no honey in their sacs

there will be a little over 5000 to the pound. When they are loaded with honey there will be only about 4000.

4. A good deal will depend upon what is meant by "an ordinary colony of bees." In some localities, especially where extracted honey is the object, and hives are tiered up, there might be 10 lbs. of bees or between 40,000 or 50,000. In other localities, where comb honey is the object, and only a single comb-honey super or a single-story hive, we should not expect more than four or five pounds of bees, or anywhere from 15,000 to 25,000.—Ed.]

Taking Colonies Out of the Cellar in Hives from which the Bottom-boards are Removed.

My cellar is in sand, and at all times is absolutely dry. My hive-entrances are from $\frac{3}{4}$ to $\frac{1}{2}$ in., and the full width of the hive. I have no trouble in keeping the temperature above 42° in winter and under or at 50° in the spring. I believe that my bees would be all right in my cellar, without bottom-boards; but can you tell me about putting them out in late spring? Would not the bees be very apt to make trouble? It seems to me that bees, if kept late in the cellar, would move out all over the hive before one could put the hives on bottom-boards outside.

Manawa, Wis.

E. E. COLIEN.

[Since your conditions seem to be ideal we presume that your colonies would be quiet with the bottom-boards left on. At any rate, you could put them in that way, and then if you have to provide more air, take them off, later in the cellar. It is a good plan to remove colonies from the cellar when the temperature is such that they will not fly to any great extent. A cool day is all right, toward evening; or if you could take them out by night, all the better. If the bottom-boards were off, and if the bees *did* give you trouble, you could set each hive on the bottom-board in the cellar before you carry it out. In fact, that is the usual way.—Ed.]

Should Colonies that have been Moved have a Cleansing Flight before being Placed in the Cellar?

I am just building a bee-cellar, 10 x 24, and should like to ask you if it would be advisable to move 100 colonies about $1\frac{1}{2}$ miles and put them directly into the cellar, or should they have a flight? The moving causes the bees to gorge themselves with honey.

Circleville, Kan., Sept. 29.

C. S. BORDNER.

[We do not believe it would be necessary for you to give your bees a flight after you move them, before placing them in the cellar. A number of instances have been reported of apiaries moved a considerable distance, and placed directly in the cellar with no bad results.

So far as the bees gorging themselves with honey is concerned, we think that the ordinary moving, as when they are taken up from the summer stands and carried to the cellar, usually, when the hives are bumped around considerably, causes the bees to fill up, probably, as much as yours would in being moved $1\frac{1}{2}$ miles, and so it would seem to us that you could neglect this feature.—Ed.]

Wintering Extra Queens.

I have a young queen I should like to keep over until spring. How can I do it?

Canton, O., Oct. 4.

F. K. ROBINSON.

[It is a rather difficult matter to winter over an extra queen unless you form a nucleus to keep her in. Even then it requires rather close watching to winter the nucleus safely. In a good cellar you would not have much difficulty. Ordinarily the best plan would be to destroy some old queen in the apiary—one which would not amount to much the next season, and put the extra queen in her place.—Ed.]

Interchanging a Laying Worker Colony with a Normal Colony to Get a Queen Introduced.

I had a queenless colony with fertile workers, and I gave the bees a frame of young brood and eggs, but they refused to start cells. I gave them another frame of young brood and changed places with a strong queenright colony, and cells were started at once. I suppose the bees from the queenright colony started them, not being satisfied with fertile workers.

Dunkirk, O.

S. LONGABAUGH.

Our Homes

By A. I. Root

The wages of sin is death.—ROMANS 6:23.

Remember the sabbath day to keep it holy.—EXODUS 20:8.

And the Lord took off their chariot wheels, that they drove them heavily: so that the Egyptians said, Let us flee from the face of Israel: for the Lord fighteth for them against the Egyptians.—EXODUS 14:25.

While I write, flying-machines seem to be in the air and in the minds of a great many of our people. I have been predicting for some time that we would soon see them overhead in such numbers that they would not call forth any more attention than the automobiles that are getting to be almost as common, even in country places, as the horse-drawn vehicles. When I announced the coming of electric railways in my boyhood, I was somewhat disappointed because they were so *slow* in getting along; and when I told you five years ago what I saw the Wright brothers do, I felt sure that flying would be a common thing in a year or two; and after its development across the seas about a year ago I said that before now few there would be plenty of them all over the United States. Well, we have not seen the snowflakes yet here in Medina; and flying-machines are not going to be as plentiful as I expected, during this year of 1910.

Now to get down to business, or to take up the subject I had in mind, let me remark that as much as three or four weeks ago a project was put on foot to have a lot of aviators attempt a flight from New York to Chicago. The matter was presented to the Wright brothers, and, if I am correct, they promised to enter into the contest. All together there were to be toward a dozen flying-machines. At first the date was fixed for the fore part of the first week in October. As it might take four or five days, it occurred to me in the outset that they would have to start during the fore part of the week to avoid being out over Sunday, especially if they flew only in the day time and not by night. Well, as nearly as I can make out, the event was postponed several times until they were talking about starting on Saturday. I felt sure the Wright brothers would object, as they always have done, to *any* Sunday flying. They would do this out of respect to their old father, who is a minister of the gospel, if for no other reason. Therefore I was not surprised when told that only *four* were going to make the flight, and they were going to start on Saturday afternoon. Later still I was yet more pained to have the papers tell us (without protesting or commenting), that the flight was to begin on *Sunday* afternoon, October 9. I think the Saturday papers informed us further that all had dropped out but one—Eugene Ely—and he was to start alone on Sunday afternoon. Two others with their

aeroplanes were to go a piece with him, and see that he got under way all right, without any mishap. I suppose that most of you know from accounts in the papers how it turned out. Here is what I found in the Cleveland *Plain Dealer* in regard to the matter:

HE MAY ARRIVE LATE.

Kissing his wife and assuring her that he would join her at the Hotel Astor, in New York, not later than next Friday noon, Eugene Ely sailed from Chicago in a Curtiss biplane Sunday afternoon.

Then he flew nine miles.

Let us pause a little right here. If I should say that I almost *knew* he would have bad luck if he started on Sunday afternoon some of you would call me superstitious and perhaps fanatical. If you recall the matter, you will remember that once Agrippa told Paul *he* was mad.

Paul answered, "I am not mad, but speak forth the words of truth and soberness." I am sure, friends, if you will listen to me you will agree that I speak forth the words of "truth and soberness" in defense of our Christian sabbath. If I am right about it, starting out with a lot of flying-machines on Sunday afternoon is breaking the laws of our land, and I think the officers of the law, if they choose, could forbid such an undertaking; and it is most *certainly* breaking the laws of God. Did you ever think of and admire the wonderful wisdom of the way in which we are told or asked to observe the sabbath—"Remember the sabbath day to keep it holy"?

Now, in the above we are not told just what we *should* do and what we *should* not do on Sunday. The Pharisees tried that, and had over a hundred rules for it. We can, each one of us, if we desire to obey the great Father above, decide what course of conduct is *holy* and what is not. Please do not understand that I think Sunday particularly different from any other day. People generally, especially good people, have decided on one particular day of the week to be called God's day—a day of rest from all of our duties and cares, and a day to consider especially God's wishes and God's commands to his children.

I am well aware that there is much disposition of late to regard Sunday as a holiday rather than a holy day; and a certain class of people have seemed to think it proper and fitting to select that day for running automobiles, testing flying-machines, etc. When the Gorge Railway was opened some years ago they ran their first cars on Sunday—or, rather, *undertook* to run them on that day—but they had a bad breakdown. I was not surprised, for I rather expected it when the papers announced that the first car was to carry passengers through that gorge on Sunday. Since then various undertakings and enterprises of a similar kind have been started on Sunday. Recently a daring and reckless young man undertook to run the Whirlpool Rapids at Niagara, and took *Sunday* for the feat. He did not lose his life, but came so near it that he was fished out so nearly dead that he had just

life enough left to grab hold of a rope. I do not know whether it taught him a lesson or not. So many awful accidents have happened on Sunday that the daily papers have made comments. They did not suggest that it was the *wrong* thing to do. They only said it seems queer that there should be such an array of fatalities and strange accidents to be chronicled *every Monday morning*. Now, then, for our words of truth and soberness, as Paul expressed it.

With the number of Christian people there now are (sprinkled like "salt") all over the land, it would seem as though anybody, whatever his belief, should have some scruple about shocking the feelings of the best class of people in the world, if nothing more. Out of respect to the ministers, good men and women, especially the old mothers in Israel, any sober and sane man should reflect a little about disturbing the peace and quietness of the ordinary sabbath. Shouldn't every sane and sober man also *consider* the words of our text—"Remember the sabbath day to keep it holy"? Is there any one who has never heard these words, and who does not know when Sunday comes? When I was in Cuba I met a class of people, or whole neighborhoods, who had never been told or else had forgotten when Sunday came. Of course, *they* were excusable; and when they came to buy honey of us on Sunday morning, and had their pitchers and pieces of money, I recommended to our boys letting them have the honey as it was impossible (as they did not speak our language) to explain to them *why* honey was sold only on certain days, or perhaps, rather, why it was *not* sold on *one* certain day.

Now, there is a *reason* why more disasters happen on Sunday than on any other day. In fact, there is a reason for every thing in God's holy word if you will study it. The man or woman, boy or girl, who has no respect at all for the feelings of Christians, and who has no regard for God's holy command—such a one is not a proper person to be trusted where life and death are at stake. The employees on our street-cars object to Sunday work. They would avoid it if they could. They are often tired out because of overwork, and are more likely to forget, and make mistakes.

Within a few miles of Medina is a very pretty lake. During the past forty or fifty years several people have lost their lives in that lake—especially young people, and it has almost *always* happened on Sunday. A young girl, in spite of her parents' protests, went to that lake on Sunday with a crowd of reckless boys and girls. In the same reckless way she went out riding in a boat with several young men. I think one of them had been drinking. She fell out and was allowed to drown when the boat was upset; but the manly (?) young men all got ashore by some means or other. It was her reckless disregard for the advice of older friends, and a disregard, also, for God's commands, that caused her to lose her life. When this matter of Sunday sport came up

in our town some time ago the pastor of our church remonstrated with a man who was running a billiard-hall. In answer to his kind and respectful suggestions, the fellow replied, "I would not give a d— for your Sunday." Now, would such a man, especially one who would not scruple to answer a minister of the gospel in this way—would such a one, I say, be a safe pilot for an automobile, electric car, or a flying-machine? This man Ely seems to have been the only one of about a dozen who was willing to start out on Sunday afternoon on this trip of flying from Chicago to New York. He had plenty of time to put his machine in the most perfect trim, for they had been waiting all the week for favorable weather; but before he had flown even *nine miles* there was something the matter with his carburetor. He came down and got it fixed, and got up in the air again; but just as he left the ground one of the rubber-tired wheels for starting and stopping caught an obstruction and was torn off. After several more delays he got started again, and then something *else* happened. In fact, by some strange fatuity—that is, so some people said—"bad luck" seemed to follow him. By the way, I just saw a suggestion in some of the papers, that, if you want to secure good luck, you should always go half way or more to meet it. Folks who start out on such enterprises on Sunday are certainly *not* going "half way" to meet good luck.

Please do not understand me that I would cut off *all* work or business on Sunday. Jesus told the Pharisees, who were criticising him, that when an ass or an ox or a sheep fell into a pit or well on the sabbath day it was right and proper to help it out, even on that day, as they did. And if a hurricane were to tear down fences so that stock get into the corn, by all means turn out, men, women, and children, and save the stock and the corn. Sometimes it is a little difficult to decide just how *far* we should go in our efforts to save property on Sunday. I have had some experience in my busy life in doing things on Sunday, not because they really *had* to be done, but because I *wanted* to do them. Our friend Christian, in Pilgrim's Progress, got out of the straight and narrow path once on a time. He received several warnings, but failed to heed them. Finally he saw flashes of fire flaming from a great rock over his head. He told "Goodwill" that he was afraid the fire might fall on his head and kill him if he went any further that way. Dear friends, I have seen the fire of God's wrath, as I verily believe, flash out from the great cliff above my head. I came back, however, and sought the straight and narrow path once more, asking God to forgive me. These reminders of God's displeasure, when we deliberately break his laws, I think come to all of us.

In our last text we are told that the Lord took off the chariot wheels belonging to the Egyptians. The poor fellows had been forbidden repeatedly to interfere with the Isra-

elites; but they pushed ahead in an *awful* spirit of recklessness. I can imagine their utter dismay when they got into the deep mud. No wonder their chariots "drave heavily." When it was too late they were convinced that "the Lord" did in very truth "fight" for his people; but the floods swallowed them up as a punishment for their transgression.

I realize, while I make this protest in this Home paper, there are multitudes who are against me. In our great cities it seems to be more and more the fashion to have big excursions and every thing else going on, even on God's holy day. On account of a belated train Mrs. Root and I reached New Orleans, once on a time, on Sunday morning. Neither of us will ever forget the shock we experienced to hear bands playing, auctioneers shouting the quality of their wares, and to witness a regular bedlam, or perhaps I might call it "vanity fair." Mrs. Root clung to my arm and said, "O husband! let us hunt up a church and some Christian people, if there are any such, in this awful place." So we joined in the throng that was on the way to the nearest church, for it was about church time, and looked after our baggage later in the day. Things are not so bad in our cities here in the North, but I am afraid affairs are tending that way. Railways, steamboats, and electric cars seem to be doing all in their power to encourage sabbath desecration. A prominent railroad man told me they would be *glad* to give it up. They say, however, the people demand it, and they have to abide by the will of the people. Years ago, as I have told you, the A. I. Root Co. (come to think of it, I believe it was plain A. I. Root then) declared that no Sunday excursion should pass the curve on our ground that connects our two railways. Our position at that time broke up the excursion business in this locality, and it has never been taken up since. It is *not* a very difficult matter, dear friends, to stem the tide of evil when God is on your side. Remember, "Five of you shall chase a hundred, and a hundred of you shall put ten thousand to flight."—Lev. 26:8. Who is there among us who will "dare to be a Daniel" in this needed reform?

AVIATION AT THE CLEVELAND CENTENNIAL.

While I am on the subject of aviation I have something further to say that does not particularly belong to starting out with flying-machines on Sunday. Through the daily papers and other means, Cuyahoga County's centennial, lasting from October 10th to the 15th, was very widely advertised all over this region, and particularly the aviation exhibitions. The following clippings from the *Plain Dealer* of Oct. 15 tell us something about it:

About 200 policemen guarded all entrances to the field yesterday; and any one who could think up a sufficiently persuasive argument to get by the blue-coats was entitled to admission without further parley. Employees of the railroad were about the only ones who saw the flights without going through the formality of buying a ticket.

Four machines will be ready for flight. Altitude, speed, climbing, and bomb-throwing contests will be on the program, which opens at 1 o'clock.

To-day's program will be the most interesting one of the entire meet. Altitude flights, glides from the clouds, speed contests, and bomb-throwing experiments will be staged. Post, Mars, McCurdy, and Ely will be the contesting aviators.

Fair weather is promised, and it is expected that fully 30,000 persons will attend the meet. Saturday is the last day.

These exhibitions of flight were given in Lakeside Park; but, unlike the exhibitions I described on p. 675, last issue, where thousands could view the spectacle, high or low, rich or poor, black or white, without money and without price, this exhibition was guarded from the public at large by means of canvas fences so high that no one could well look over them. As it extended clear around Lakeside Park it must have cost quite a sum of money. Then the first one of the clippings tells us that 200 policemen were employed to keep the small boys who could not raise half a dollar from crawling under, and getting a glimpse of this wonderful flying-machine. At the gateway we were further informed that the fifty cents entitled us to only a seat on the side-hill. If we wanted to go down near the machines and get a view of their construction, it would cost another half a dollar. But even after we had paid the fifty cents, or had even got inside, we were not furnished a program. The program agents were exceedingly busy all during the entertainment in holding said program under the noses of the people, and telling them they could not understand the flying-machine unless they had a program. The program cost ten cents. One of the clippings above tells us that 30,000 people were expected to pay fifty cents each, or a dollar each, and then a dime more for a program. Well, perhaps I would not have said any thing about the ten cents for the program were it not for the clips all the way through it at the Wright brothers. Here is a sample of them:

It takes the combined efforts of a dozen men to haul the Wright flyer around on its cumbersome, wide-tired wheels and adjust it on the starting-rail before it is as nearly ready for a flight as is the Curtiss machine at all times.

The Wrights are content, on the other hand, with a machine which trundles along at forty miles an hour, and which must either return to its starting-rail before flying again, or else have the starting-rail brought to it.

Let us stop and consider a minute. The advertisement says there were to be four machines on the ground, and seven different aviators were advertised to make flights. We got our seats about one o'clock—the time the flights were advertised to begin. After an hour or more, two machines were run out of the tent. After trying one of the two for about half an hour, and failing utterly to make it get off the ground, they confined their attention to the one remaining machine. During the afternoon this one machine made four flights of three to five minutes each. There were no trials for duration, no trials for altitude, no speed contests, no flights with passengers, and no feats to compare with the ones the Wright

students made on the afternoon I visited them. In fact, the whole afternoon seemed to be spent in fussing with the machines to make them go. After it got so near dark that it was difficult to see, I am told that a machine made a flight over the lake; and it seemed to me that the four brief flights I witnessed were purposely kept near the ground so people outside of the canvas inclosure would be unable to get a glimpse of them. I suppose the seats on the side-hill would hold, say, 20,000 persons; but I felt glad to notice that only a small part of the seats were occupied. Huber said that, the day before, the seats were nearly all filled; but instead of following the advertised program, *one machine* made quite a few brief flights of four or five minutes each. It certainly *was* a grand sight, and worth going miles to see, especially when that one machine ran along the smooth ground and gradually climbed up into the air. But what a poor tribute, to put it mildly, these people were paying (I do not know exactly who was responsible for it) to the Wright brothers who first demonstrated to the world that a machine could be *made* to climb up into the air without any balloon at all—what a *poor tribute*, I say, to pay, to have a man around peddling these programs containing such matter as I have quoted; yet the vender of those leaflets actually pushed them under our noses while the machines were leaving the ground. He got in my way so many times I was sorely tempted to push him over down hill, especially after reading what they said about the Wrights.

Let us now take that up for a minute. It *never* took a dozen men to haul around the Wright flyer, even in their first experiments. I know, for I was there; and at the very time this statement was made, it did not take any men (or boys either) to get the Wright flyers up to the starting-place. The aviator just starts his engine, and the propeller which carries it over the ground or through the air takes it up to the starting-point, even if it is *up hill*. The Curtiss crowd, or whoever it was, kept that crowd of 30,000 people, more or less, waiting while a couple of men *ran themselves out of breath* to help get the machine back to the tent for more gasoline. Why in the world he did not put on his propellers and *run back* I could never tell. The Wright brothers have not used a starting-rail this season, and perhaps not last season nor the one before that. Several times they have been asked or have been offered money to go into the "show business;" but they have always declined, and God will honor them for it, even if the people do not; and I believe, too, they have refused to *sell* machines to those who wanted to go into the "show business." I have been informed on good authority that Glenn H. Curtiss visited the Wright brothers before he made a flying-machine at all. They extended to him every courtesy, and permitted him to look their machines all over at his leisure; but it would seem that, as soon as he left, he copied their machine as

near as he could without too flagrant an infringement on their patents. At present I know nothing about the suit for infringement. God forbid that the "graft business" or any thing like it should be permitted to go any further in the field of aviation. Flying-machines are a gift from God to his children of this new century; and it ill becomes us to use this gift for taking the money from our hard-working people, especially taking the money and *then* not furnishing the entertainment that was promised and paraded through all the papers. May be I have found fault enough for one time; but right here I must put in another protest. Many of the aviators (but not the Wright brothers, thank God) are users of cigarettes; and when they alight from a flight the first thing they do is to fish a cigarette out of their pocket and light it while thousands of country boys and Sunday-school children too are looking on. What an example to set before the rising generation!

Later.—This is Monday, Oct. 17. It occurs to me that perhaps the Cleveland officials, or whoever is responsible, had a few twinges of conscience about taking the people's money during the week and returning them so poor an equivalent; so they decided to give a free exhibition on Sunday. This morning's paper tells us:

When J. A. C. McCurdy had reached an altitude of about 3300 feet yesterday afternoon in his trial for altitude, Robertson's band struck up "Nearer, My God, to Thee."

Just as soon as I read the above I wondered if the thoughts suggested by the singing of that beautiful hymn did not send the cold chills down *somebody's* back. I suppose the thought was that being high up in the air *was* getting nearer to God, especially in that great city of about 2000 saloons; and I am right glad to know there was one aviator who recognized the awful inconsistency, for we read:

Aviator Mars, who has been doing daredevil stunts all his life, is very superstitious. He refused to fly while the band was playing a doleful melody.*

God bless brother Mars. I hope we may all have a little more of that "superstition," especially when Sunday aviation is going on. It seems, however, that some of the flying-machine speculators felt a little sore because the law would not permit them to charge admission into that inclosure on Sunday. See the following:

If the regular rates of admission had been paid at the gate of the aviation field yesterday there would have been more than \$100,000 in the box office.

Later.—I notice by the Cleveland *Plain Dealer* that they have just had *another* aviation on Sunday (or tried to) at Belmont Park, Long Island. I will make just two clippings from the account. The first is a sentence from the opening of a long article:

There were two smash-ups, Oct. 23, no flights, and 7500 disappointed spectators at the second day of the international aviation meet at Belmont Park, Long Island.

And here is the concluding paragraph:

The Wright team, Hoxsey, Brookins, and Johnstone, were all willing and anxious to fly; but Wilbur Wright allows none of his machines to go out

on Sunday; and, although the management pleaded with him over the telephone, he remained obdurate. At 4 o'clock the events for the day were definitely called off.

Please notice that word "obdurate." One can not help wondering what sort of bringing-up some of the newspaper reporters have had. Instead of the word "obdurate" I would suggest the sentiment implied in an old hymn:

Oh! who is there among us, the true and the tried,
Who'll stand by his colors—who's on the Lord's side?

A sabbath well spent brings a week of content,
And strength for the work of the morrow;
But a sabbath profaned, whatever is gained,
Is a sure forerunner of sorrow.

THE EVERGLADES OF SOUTHERN FLORIDA.

Dear Mr. Root:—Your editorial on Florida indicates that you are in search of information about the draining of the Everglades. The State formerly owned all of the great swamp, but sold a large part of it to land companies on an agreement to drain it—the idea being that the work of development done by these companies would make what the State kept more valuable than the whole had been. Under this agreement four dredges set to work, one in the Caloosahatchee River, one in the Miami River, and two at Ft. Lauderdale. A large amount of work was done with them. For instance, the machine that went up the river (the Caloosahatchee) cut a canal from Ft. Thompson through Lake Flirt into Lake Okechobee, sixty feet wide and ten feet deep. This is large enough for the largest boats using this river. A few months ago, in order to hasten things the State advertised for bids for the cutting of 183 miles of main canals and over 300 miles of laterals. The Southern Dredging Co., of Baltimore, were the successful bidders. They took over the four State dredges, and are sending three more into the lake. One of them has just passed up the stream, and this has stimulated me to write. It is a huge suction machine that has been at work in the harbor at Galveston. Its long voyage across the Gulf of Mexico and up this river is nearing a successful end, and it will soon be at work in the south canal. Another, a dipper dredge, is about a week behind it, and will ere long be cutting its way from the lake to the ocean. When these machines get through there will be four or more navigable canals as outlets to the Everglades, and we can then cross the lower end of the peninsula by boat, and ship our truck and fruit to New York by an all-water route. Now the East Coast, though only a few miles distant, can be reached only by a long railroad journey to Sanford, 250 miles north, and then south via the Flagler lines.

One of your subscribers wrote the other day from Oklahoma, saying that he bought land near Ft. Lauderdale, and asked the character and quality. If he had sent a stamp for a reply I could only have said that this particular tract is unknown to me, being on the other side of an impenetrable swamp. His purchase may be in the Atlantic or it may be poor sand on the beach, though the probability is that it is part of the Everglades, and therefore good soil. No man should buy unless he has seen the land and is sure he is getting what he has seen.

The soil of the Everglades, like all swamp land, is very fine. If that were all that needed consideration, its purchasers would be very fortunate. But (and it is a big *but*) in this case it will take several years to get these big ditches or canals to working, and then only a beginning will have been made. Thousands of lesser drains must go in, and the expense of these will fall on the land-owner. They will be a first-class investment for him, but they will take time. It will be several years before any thing like the larger part of the Glades will be dry and ready for cultivation.

There are two pests in that region, or, rather, there is one pest that preys on two different classes and makes the value of these lands problematical.

The word insects covers the whole thing. They make life miserable for man and beast, and they eat up the crops. To the first class belong mosquitoes, gnats, and horseflies. The merciful man who cares for his beast is perhaps distressed more by the last one than the two first; but it is hard to say which is the greater trial. To this add the other class that some years devour every green thing, and you can see why I am in doubt as to the desirability of owning these exceedingly rich lands.

Many people have gone to see the lands, and have come away perfectly enthused over their richness. The reports I have had from them are very glowing; but does the prospective buyer always see all there is in the proposition before him? Land agents are not, many of them, rascals. They are sometimes honestly mistaken, and their enthusiasm is more to blame than their cupidity. Let's give them the same charity we would extend to all men. But that is no reason why a man should buy in a new country without careful study of the facts in the case.

It seems to me I have not written just what I wanted to; therefore I'll restate a few things. The State is pushing the drainage of the Everglades. It will take a long time, no matter how vigorously the work is pushed, to complete it. The land is wonderfully fertile. It will grow big crops of sugarcane and truck. Many buyers will be disappointed because they do not understand the soil, the climate, and the conditions, and give up before they have learned how to get a living out of their farms. Others will have insufficient capital, and be compelled to quit. Most of these lands are being bought by people who will never get to them. They will fall to carry out their plans. All these tracts will soon be on the market, and the price will drop. The man who buys as a speculation will have to hold for years before he will get an advanced price. The insect pest will be unendurable to many would-be settlers. On the other hand, there will be a time when that whole section will be a great garden, yielding like the much-fabled valley of the Nile.

May I, as I close, call attention to the error of your friend who informed you that the government land in this State was all away back and inaccessible? That is true as a general proposition, but, like all general propositions, it breaks down when applied to particular cases. The homesteads near Denaud are close to the river, and transportation is good. That is why I came here. My 160 acres is a mile from town, and a good river on which ply several daily lines of boats. Should any of your readers question this, let them come and see for themselves. I like the land, the climate, the fruits, and the prospect.

Denaud, Fla., Oct. 3. FRANK M. BALDWIN.

Many thanks, friend B., for your frank and honest statement; and I hope those of our readers who are thinking of investing in land in Florida without going to see it will read your article several times over. Now, although you do not say so, I want to suggest that the mosquitoes will probably disappear to a considerable extent as civilization comes in—at least if the people avail themselves of the modern methods of heading them off. There is a United States bulletin, if not two or three of them, on this very subject; and most other insect pests may be considered "preventable diseases" if they are promptly taken in hand and followed up.

"THE TRUTH" ABOUT BRADENTOWN AND MANATEE CO., FLA.

Dear Mr. Root:—I have been very busy for some time; and when the last copy of GLEANINGS came I did not get hold of it as usual, so only to-day I found Mr. E. M. Graves' article about Florida. It has so many errors that I can not resist saying a few words in reply. Mr. Graves came to Florida at about the age of 70; and if any man expects to go to a new country at that age and start life over again and make money the first year, he is expecting too much.

He says that a man has "slim chances for making money here." From 1884 to 1898 I lived in the West, and came to Florida at that time. I am

sure I never lived anywhere where more people made a fortune from nothing in ten years than here. I can name them by the score. By a fortune I do not mean great wealth, of course, but a competence, say from \$10,000 to \$35,000.

Mr. Graves says that "very few of the truck-growers got *any thing* (italics mine) out of their crops last season." I wonder where he got any such information. I rented $\frac{1}{4}$ acres of celery land from a neighbor, and he furnished the fertilizer, land, celery-boards, water, etc., and I did all the work and gave him half the net proceeds. His share was over \$100 an acre. I did much better on my home farm, and many celery-growers did far better than I did, although quite a few of them did lose money. Many of these latter, however, did not lose their own money, but the other fellow's, generally advanced by the commission men. I do not know of a single man who had any capital, and who has had some experience, who did not make better than expenses. The truckers all followed celery with other crops without fertilizers, and produced tomatoes, Irish potatoes, etc., as bountifully as I have ever seen anywhere. One neighbor raised 250 bushels of potatoes to the acre—the best crop I ever saw, north or south. He told me this week that he got \$1.00 a bushel for all of them.

Year before last the truckers simply coined money. I know of many colored men who did not have any thing when the season opened, but who cleared over \$1000 on celery alone, all the money to make their crops having been advanced by commission men, which had to be paid back first.

Bradentown is the most prosperous that it has been for eleven years, the time I have been here. We are having a steady, healthy growth. Money is the most plentiful that I have ever known. The Bank of Manatee has nearly \$300,000 deposits, and the Bank of Bradentown, a newer bank, over \$100,000. Compare this with other towns of 2000 population, and see if we are short of money. A gentleman who has loaned money here for 25 years told me the other day that many of his clients wanted to pay up their loans; that the people were getting too prosperous to need money as they have in the past. This is a new country, and rates of interest are high, mostly 10 per cent, and they were just as high when I was a boy in Illinois and Kansas twenty years ago.

Mr. Graves says that there is only one hard road at Bradentown. That road is four miles long, and the others that connect with it on many streets and roads into the country make them aggregate about ten miles, and the county has just bonded for \$250,000, and expects to be able to build with this money about 100 miles more. Four of our county towns have bonded, and expect to connect with the main roads.

What Mr. Graves says about Green Cove Springs is doubtless true, and the same could be said of many other places in Florida. I came from such a place myself; and because of the cold there I emigrated to Bradentown, but we could not get arctic winds there, and it was too cold for winter gardens.

I am always advising men who are doing well in the North, and who with their families are well, not to give up a sure thing for any thing else anywhere; but the truth will hurt no one.

Bradentown, Fla., Oct. 8, 1910.

E. B. ROOD.

SOMETHING FROM A CHICKEN MAN AND GARDENER.

Mr. A. I. Root—I do not think that your writings are too flowery concerning Florida. As you know, I have been here winter and summer for five years. I came here from New York (as good a State as there is in the Union), but would not go back to stay for any thing; and I am not the only one either. But, as you know, there are plenty of people who come here expecting to get rich quick. Some of them seem to think that they can take their little savings of twenty or thirty years of hard work in the North and come down here and sow it broadcast, and reap from ten to a hundred fold the first year, without stopping to consider that this country is new and mostly undeveloped, and that conditions are materially different here both in regard to soil and climate, also time and manner of marketing produce, etc. There are so many things to learn that I don't feel as conceited now as when I first came here, concerning the way things ought to be done; but one thing I feel sure of, and that is

that there is a great deal of money wasted on fertilizers here. We have, as you know, many acres of very rich land in Manatee Co. that are as yet untouched by plow or ax; and all it needs is to be put in proper shape to produce good crops without much commercial fertilizer; but this can not be done in one or two years. It takes time and much hard work, of course. There are large tracts of poor land here, and some practically worthless; but I believe that a majority of the lands here can be brought to a state of cultivation in a few years that will pay well.

Of course, friend Graves finds some discouraging things, or, rather, disagreeable things, about traveling over these sandy woods and roads, and fighting mosquitoes at the same time; but these are things that are fast improving as the country is settled. Although we have not many miles of hard road outside the city we expect more soon.

As for mosquitoes, they are bad out in the woods or thick hummocks for about two months or during the rainy season; but I can testify that they are no worse in Bradentown than in many places in New York; and, in fact, not as bad. There are plenty of houses here that are not screened at all, and good ones too. Flies are not nearly as numerous here as where we came from; and climate—well, I guess there is none better. If Mr. G. is so disgusted with conditions here, why is he building up his apiary and trying to buy those of which he had charge this year? He doesn't say that *bee-keeping* does not pay here.

He cites some instances in which truckers lost money last year. We do not dispute this, but we can cite plenty who did clear money last year, poor as the prices were; and I am reliably informed of one man who banked \$6000 from five acres of celery two years ago, and another man who netted \$5000 from eleven acres of grape fruit the same year; and still there are others who say that these things do not pay. You know, Mr. Root, something of what the Atwood Grove pays. This is said to be the largest solid grape-fruit grove in the world; and I believe we would be safe in estimating its average proceeds for several years at \$500 per acre. It may be far in excess of this.

With regard to building we all know that Bradentown is steadily growing—not a mushroom growth, but very substantial in its nature. I can think of about 15 new buildings started since last April, and built during the summer, when there is usually not much doing here. But this is a lamentable fact when there is such a demand for houses. A hundred are needed right now, and I heard a reliable man had said that he could rent a thousand cottages here this winter. I can't see why people are so slow to build except that they are using their money to better advantage.

About the carpenters' wages, I think you are a little high. I understand that the schedule is 40 cts. an hour for 8 hours, and brick-layers 45 cts. per hour; and I don't think there is an idle one of either kind at present.

Well, I must close with a word for the Florida summer fruits. I think they are grand, especially the mangoes and Avocado pears.

Bradentown, Fla., Oct. 8.

J. E. STANTON.

GARDENING DURING THE WINTER TIME IN FLORIDA; SOME SUGGESTIONS FROM THE DIRECTOR OF THE FLORIDA EXPERIMENT STATION,

By way of preface, let me say that my good friend, the editor of the *Rural New-Yorker*, owns a piece of land near mine, in Putnam Co.; and he is arranging to have it occupied this winter by some members of his family; and he asked me if I could suggest a good book applicable to Florida gardening in winter. I submitted the question to Prof. Rolfs, and he replies as below:

UNIVERSITY OF FLORIDA,)
AGRICULTURAL EXPERIMENT STATION,)
Gainesville, August 31, 1910.)

Dear Mr. Root—I may say in this connection that at the present time there is no book published that would be of direct service to the young man. Florida, as you know, is so old and yet so new. The

modern Florida is just awakening, and the population is rather sparse. For the most part, those of us who are here have no difficulty in making ends meet, and, on the other hand, no difficulty in spending all the money that we actually have, and sometimes that which is in sight; consequently there is very little opportunity for printing books at private expense. The sum total of what the State does in this direction seems to be rather weak and inefficient; still, when we compare it with even such rich States as Ohio we find that we are probably doing more per capita, at least more per capita of the white population, than even Ohio, and necessarily we are not quite so well fixed to do this work.

If the land you have at Huntington is good land, it is quite probable that at the present time you can sell it for more than it would have brought at any time in the last fifteen years. A large amount of land is being bought in the State, but mostly by small speculators, many of whom are likely to lose practically all that they put into it.

I will inclose you a copy of my letter to Mr. Collingwood, editor of *Rural New-Yorker*.

P. H. ROLFS, Director.

Mr. H. W. Collingwood:—Your letter of August 23 had to lie on my desk until I could return from some farmers' institute work. At the present time I do not know of any book that would be of direct value to one of your boys. Of course, there are many books that are of value in an indirect way; but I judge from your letter, and also from one written by you to Mr. A. I. Root, which he has forwarded to me with the request that I answer it, that the boy needs direct information rather than suggestion.

In Putnam Co. I think it will be safe to plant at once rutabagas, turnips, collards, cabbage, Brussels sprouts, onion-sets, lettuce, radishes, mustard, dwarf Essex rape, beets, carrots, spinach, and kale. Now, this is a very large list; but you can select from this those that would most nearly meet your needs. The rutabagas are likely to fail; still, the chances of succeeding are sufficiently good to warrant trying them. Turnips are pretty sure to give you a nice crop. It will be best to plant some of the very early varieties, and also some of the later-ripening varieties, so as to have a succession of them. Collards you will hardly want to plant unless you want it for poultry and cattle feed. Cabbage should be set out. It is quite probable you can get good plants from T. K. Godbey, Waldo, Florida. I do not know whether it would be practicable to get any plants of Brussels sprouts or not. Possibly Mr. Godbey may have a few, but I doubt it. Among the onions it will be best to get the Bermuda sets. In getting these sets it will be advisable to grade them into two or three sizes, planting the larger ones separate from the smaller. This then will relieve the bed in which the larger ones are planted while the smaller ones are coming into use. Lettuce-plants can probably be obtained at Palatka. It will probably not be advisable to get them from any distance, as lettuce-plants do not take kindly to shipping, and then the plants can be raised so quickly from the seed-bed.

In the case of mustard, it will be more desirable to make repeated sowings—that is, if the family is fond of the vegetable. When it gets too hard for table use, it can, of course, be used for feeding stock on the farm. Dwarf Essex rape should be sown, by all means. It will be best to sow considerably more than can be used. Under favorable circumstances you will get a good yield of this vegetable. All farm stock is fond of it, and it makes one of the best greens for family use. When it is tender and succulent it approaches cabbage in flavor and taste. In the case of beets it will be best to sow early-maturing varieties, and also varieties that are a little longer in maturing, or else make repeated sowings of the early-maturing varieties. The question as to whether you should sow carrots or not will all depend upon whether the family is fond of this vegetable. Spinach is so largely used that there is hardly any need of putting a question with this. It is not planted extensively in Florida, because it is hardy enough to grow further north, and then we have so many other plants that give us greens during the winter that there is very little local demand.

In addition to the vegetables that I have named above I would urge you strongly to put out a nice patch of Klondike strawberries. It need not be a large plot. My bed last year was contained in an

area of about 20x25 feet. It gave us ripe strawberries from January to June. During a large part of the season we had more strawberries than the family of four could use. This small bed contained about 800 plants. The soil, of course, was in perfect condition, and I had plenty of water for the dry weather. The plants were set out in October, and, as stated above, the first strawberries were ripe in January. At Gainesville we had some very cold weather last year—in fact, the coldest that we have had in about fifteen years. The plants, however, were covered with a single thickness of unbleached domestic. While this did not protect all of the bloom during the very cold weather, it protected the berries that had set.

One word in regard to fertilizer: As you are living in New Jersey, you are doubtless fully up on the fertilizer question. We believe here that the organic ammonias are quite preferable for the general formula, and that the nitrate of soda is needed for reinforcing this to give the plants some nitrogen that is immediately available.

It is quite probable that you have some arrangements whereby this garden can be irrigated. If this is the case you will find that it will require only a small area to supply all the vegetables that can be used. If there is no way of irrigating the garden cheaply, a great many disappointments are likely to occur, especially if October and November turn out to be dry months.

P. H. ROLFS, Director.

Poultry Department

By A. I. ROOT

ROOFLESS POULTRY-HOUSES FOR FLORIDA AND OTHER SOUTHERN CLIMES, ETC.

We have wireless telegraphy, lampless brooders for chickens, and why *not* have "roofless" poultry-houses, especially down south? Our readers may remember we have had several articles already from Florida people on this subject; therefore we can afford to read carefully and attentively the following from our old and able friend Irving Keck:

Dear Bro. Root:—I have been greatly interested of late in the Home papers. I am glad to see your stand on the land games that are being worked on those who are not familiar with conditions. If men will come to Florida, spend a year working for some native who has made a success, he will know a lot about Florida conditions that no land agent can tell him, and he will know whether he wants to sacrifice a home north, and come and join with us here. As you know, I have been here over 25 years, and expect to end my days here; but I do not like to see folks paying big prices for land that will not sprout peas. There is good land in Florida, and there is lots about as poor as can be found, and often the two kinds are *not ten rods apart*.

Now to your chicken question. I will give the experience of a neighbor, call him Smith. That is not his name, and I have no permission to quote him, so I will call him Smith. Smith was born in South Carolina; when a young man he went to Montana and officiated as cowboy and bronco-buster till pneumonia got him two or three times, when the doctors hustled him to a warmer climate and gave him six months to make his will and get things in shape. As he had spent his money on those doctors it did not take long to "shape" his affairs, and a will was something he had always had; so a dozen years ago he landed in Florida about ten miles from me. He looked over the situation, and said, "May be I'll fool the doctors yet," and went to work with vegetables, oranges, and chickens. Well, two years ago he sold one of his places for *twenty thousand dollars*, and has a place about two miles from me that I am sure will take \$5000 to buy, and he is alive, and sometimes very much alive, yet. Now for some of the things he has worked out under Florida conditions, for those who are in the chicken business in Florida know that lice, mites, and stick-tights are

"always with us" with roup, sorehead, pip, snakes, hawks, owls, possums, skunks, cats, rats, boys, and darkies throw in to make things spicy and entertaining, and to give variety. Smith lays this down as a foundation fact never to be lost sight of for a minute—*keep your chickens from under sheds, stables, or a shelter of any kind; and, next in importance, do not let them scratch in their droppings—the two things he considers absolutely essential.*

His methods may interest you. In a month now he will set, say, half a dozen hens. When they hatch he will put coops along the timber adjoining the creek, and on the back of each little chicken's head will be a spot of syrup with crystals of strychnine crushed and mixed in the syrup. If there is not much rain this syrup will be there for a month. If the chicks are out in the wet grass, then it will have to be renewed. Whenever a hawk gets one of these chickens it means a dead hawk, sure. This is preparatory to setting the incubators going, say Jan. 1; and if a possum or polecat gets one of these little fellows, it means one less to prey on the main crop of chickens. When the chickens come by the hundreds they are put in brooders, and sheltered in movable pens, so as to be on fresh ground every few days; then, wheat, oats, rye, rape, and such crops are kept coming all the time so as to have an abundance of green feed. When they are feathered out, the cockerels, except those reserved for breeders, are separated, and pushed for all they are worth, and sold as broilers at Tampa mainly.

The pullets are put in coops about 6x10, boarded 6 ft. high on the north and west to break the cold winds; wire netting on the east and south to give the early sun, and ventilation; and a wire netting for a roof. The only reason for this is that owls and the colored brother are not so likely to have fried chicken. Say 25 pullets are put to each of these colony houses, shut up for a week; after that they will always go to their own house. An opening is left on the north, say 6x12 inches, on a level with the roosts, and a board projects, say, 18 inches. If a possum comes along he does not see why he can not get through the wire netting, walks around the house, but never sees the opening above his head. In the afternoon a board long enough to make an easy incline is placed, one end on the ground, the other on this projecting board, and the chickens go to bed without any further attention except to throw the incline down so the possums can't use it, and in the morning they need no attention, for they simply come out on this projecting board and go to the grove and feed.

Two roosts are in each house with 24-inch wire netting on the inside, and the same right under the roosts. The droppings fall through, and are collected every few days; and the houses are not so heavy but they can be handled and moved if desirable. They are placed in the orange-grove, and in feeding he manages so the droppings are scattered, and the fertilizer question is solved for him.

The grove is allowed to grow up in weeds, and the trees and weeds furnish shelter from the sun, rains, and hawks. As he said, a White Leghorn in a hard rain will stand under an orange-tree, and it will straighten itself till it is not much thicker than a shingle, and the rain does not hurt it.

For nests, he has them placed side by side, about 50 of them, say 3 ft. from the ground, with a shed roof over them, say 3 ft. wide, highest in front, to shelter the hens from the sun, and to keep a shower from staining the eggs. Porcelain nest-eggs are used, and eggs gathered every day packed in 12-doz. cases, and shipped to Tampa. His instructions to the man who handles his eggs at Tampa are: "If a man comes in and claims he found a stale egg in one of my cases, give him the case and the eggs; don't take a cent for them; but never, under any circumstances, sell that man another egg, for he has lied, and I don't want to deal with that kind of a man."

I said, "Suppose a hen steals a nest."

"Those eggs always go to the kitchen; and we settle right here whether they are stale or not, so I absolutely know that every egg that goes into a case has been laid that day."

He says if he were physically able he would grow all his own feed—corn, oats, rye, millet, sorghum, kafir corn, rice, etc.; but he does not want to keep a hired hand, has no boys of his own, and he and the wife do the work. The nests are made of pine straw and tobacco-stems. The pine straw is renewed every week; the old straw is buried.

Well, as to results, last spring he hatched 1500

chickens; has now between 600 and 700 hens beginning to lay, and has not had a sick chicken.

He feeds once a day all they will eat that day, and keeps dry mash before them in hoppers. I said, "What is the result financially?"

His reply was, "Mr. Keck, my hens are the best-paying investment I have."

So I had to draw my own conclusions; but an invalid who, in a dozen years, can clean up \$25,000 has some things that are making money. Now as you have said, it is the man. Others will tell you, "Chickens eat their heads off," and right on this place he had a renter, before he sold his other grove, who kept chickens and had to buy eggs and chickens for his own table; and the place was "seeded down" to all sorts of vermin, but they surely are not there now.

I hope I have not wearied you; but this is the work of a practical man who started in a small way and has gradually grown to a good paying profitable business; and if, through you, it will be helpful to others trying Florida conditions I will have been repaid.

Mrs. K. and I had hoped to meet you and the good wife last winter, but did not see how we could both leave at once.

I have read Terry's health-book with great interest. I loaned it to a lady friend who was in a desperate condition. I told her if she was willing to pay the price in self-denial I believed there was help for her. She read and reread, again and again, and said she was willing, and she is now the marvel of her friends. I have been looking for you to get astride the "Baccali Bulgaricus" and apply whip and spur. I am sure you have ridden less worthy hobbies. It is the germ that prevents auto intoxication. The Battle Creek people offer it under the trade name of "yougart." I believe you would find it of great help to you. It surely has done wonders for me. It is Mickneoff's lactic-acid ferment, and it prevents the formation of ptomain poisons in the colon; and from what I know of your case, there is the foundation of your troubles.

Bowling Green, Fla., Sept. 30. IRVING KECK.

Friend Keck, we are greatly rejoiced to know that "brother Smith" has succeeded in fighting off the great white plague; but the question may be asked whether it was the genial Florida climate or the "chicken" business. Perhaps it was a combination of the two. There is a good moral to it, any way. The plan for applying strychnine is indeed a novel one; but I think I should prefer a fence with one-inch netting, for the lower two feet, to strychnine. Perhaps both would be a good thing. His plan of letting the chickens get out of and into the poultry-house without permitting night prowlers to get in is also ingenious. Since you mention it, I am ashamed to say I never thought of it before. We have always permitted our chickens to scratch over their own droppings. In fact, I supposed that was a shrewd invention of mine, and with very small chicks, and plenty of chaff or shredded alfalfa for litter, I hardly think the droppings can do any harm. But I will proceed to test your suggestion. The fact that he and his wife do all the work without any hired help is an item of great importance just now when labor is so high. I have felt sure all along that chickens could be so managed, even in Florida, that you need not have, as you state it, "a sick chicken." Amen to your remarks in regard to self-denial in connection with Terry's teachings.

I like your paper very much. It is the first paper I have seen that would go for all the humbugs and systems. I have tried the most of them.

Ashtabula, Ohio, June 27. RICHARD OSTROM.

Cleanings in Bee Culture

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Editorial

WE should like to see the question of settling-tank vs. strainers in the extracting-yard discussed. Or is a combination of the two methods better?

Now is a good time to move your bees from one portion of an apiary to another. See editorial in our issue for Oct. 15, p. 645, and elsewhere in this issue.

SYRUP TO FEED BEES.

AT this time of the year, do not give any syrup thinner than two and one-half parts of sugar to one of water, boiling hot; and it should be well stirred. If the weather is a little cool, feed this while hot.

SIZE OF ENTRANCES FOR OUTDOOR WINTERING.

MR. IRA D. BARTLETT, of East Jordan, Mich., who makes a practice of wintering outdoors in large packing-boxes, recommends, in the *Review*, an entrance $\frac{3}{8} \times 4\frac{1}{2}$. This dovetails very nicely with our experience here in Medina, with this difference: We recommend in the case of extra-strong colonies a little wider entrance, and for five or six frame colonies a slightly narrower one.

ARE BEES MORE HOSTILE TO BLACK THAN TO WHITE CLOTHING?

ON p. 716 of this issue our New England correspondent somewhat doubts the oft-repeated statement that bees are much more inclined to be cross to persons in dark clothing rather than light. He believes that bees become "educated" to the clothing a person wears. Wonder if he is right. We should like to see this question discussed. In this connection it will be remembered that one of our correspondents related how two dogs came into a bee-yard when the bees were not in the best of humor—one of them a black dog and the other a white one. The bees furiously attacked the black dog but paid hardly any attention to the white one. Was this a case of "education" or what?

ASTER HONEY ALL RIGHT FOR WINTER STORES.

IN certain seasons some of the bee-keepers of Northern Michigan have found that

severe winter losses followed when aster honey was the chief winter supply of stores. The honey may differ in different localities, but there may also be some other condition that has something to do with the matter. Perhaps aster honey is not suitable for a winter that is long and severe, with practically no days for flight. We have just heard from Mr. C. Raney, Petersburg, Tenn., who had written us some time previous that his combs were full of aster honey, and he now says that colonies in his locality winter well on aster honey, for it does not crystallize until it is a year old. The winters in Tennessee are undoubtedly much more open, and give more chances for cleansing flights.

MORE IN REGARD TO MOVING COLONIES SHORT DISTANCES IN THE SAME YARD.

WE have had such good success in moving colonies a few rods without having the bees return to the old location that we think the advice sometimes given to move colonies a couple of miles, temporarily, and then later bring them back to the new location in the old yard, is now entirely unnecessary. In the moving that we did, as mentioned p. 645, Oct. 15, about a dozen colonies were taken away from the north side of a tree and carried to the south part of the apiary. The hives had been arranged in the form of a circle around the tree, and all were removed except those on the east and south side of the tree. As mentioned in the editorial above referred to, we smoked the bees thoroughly and pounded the hives vigorously in moving, in order to make sure that the bees filled up before flying.

After about two weeks, when we again had occasion to go to this yard we found that the hive on the east side next to the place where the other hives had formerly stood, contained rather more bees than it did originally, showing that a few had gone back to the old location; and, not being able to find the hive, they had gone into the one nearest. This only goes to show that, when hives are moved in this way, no one hive should be left very near the old location unless it contains a weak colony that should be strengthened. But practically all the few bees that return are old bees any way, and it is a question whether the colonies that lost them will suffer much, or the colony that gained them be much ahead in the long run. Of course we are referring now to moving that is done in the fall of the year.

THOSE "MOVING PICTURES" FOR GLEANINGS.

In this issue we give the first of our series of "moving pictures," showing Mr. S. D. Chapman in the act of hiving a swarm of bees. In our next we shall show Mr. R. F. Holtermann in the act of carrying his bees to the cellar. His method of picking up his big twelve-frame hives is simple and easy, and we shall show our friend in the act of handling those big hives.

The fact is, he made us a short visit at Medina this fall; and while here we availed ourselves of the opportunity of catching him in a series of "moving pictures." He then suggested that his method of carrying bees into the cellar, or carrying them out, for that matter, might prove helpful to our readers. We hunted up a twelve-frame hive and caught him in several poses.

We regret that we were unable to get the matter before our readers in an earlier issue. While most bees will be in the cellar by Dec. 1, the information will be valuable in showing how to take bees out of the cellar.

In our Dec. 15th issue we shall show not only E. D. Townsend but others in "moving-picture" acts. From that time on, the "moving-pictures" will be a special feature of GLEANINGS throughout the year.

It is unnecessary to repeat right here that, when we say "moving pictures," we mean a series of snapshots showing each separate step in any operation. The object of these pictures is to show how to perform many of the manipulations in a bee-yard to the busy man who has not the time to read through a long description.

EIGHT OR TEN FRAME HIVES; A PLEA FOR STANDARDIZATION IN HIVES AND SHIPPING-CASES.

ELSEWHERE in this issue, page 730, our old correspondent R. C. Aikin goes into quite an extended discussion of this question, and finally winds up with a plea for two brood-chambers of eight-frame Langstroth capacity, one placed on top of the other. Our older readers will remember that, about twelve or fifteen years ago, we advocated this very thing; that is, we took the ground that the eight-frame brood-nest was not large enough for a good vigorous queen; that we found it an advantage to run our comb-honey colonies in two eight-frame bodies up until the main honey-flow was on. We then removed one of the stories, placing most of the brood in the brood-chamber left on the old stand. The other combs were then distributed among colonies not up to comb-honey pitch. This necessarily left a very large force of bees that could hardly be accommodated in the one brood-nest. By giving one or two supers, one of them an extracting-super and the other a comb-honey super, we were able to accommodate all the bees. The colony would immediately go to work in the extracting-super, and as soon as it was nicely started this was taken away, when the bees

were forced to go to work in the sections. Sometimes an extra comb-honey super was given, and sometimes the colony was allowed to have only one super.

The plan worked beautifully. We secured tremendously strong colonies, and that is just what every comb-honey producer knows we must have for the production of comb honey. But we found in later years that two ten-frame brood-chambers can be worked in the same way, and the result will be just as satisfactory. While it may be argued that twenty frames is too much for any queen, we may also say that a sixteen-frame capacity is also too large for the average good queen. But the tendency nowadays is more and more toward the production of extracted. The general public is beginning to have confidence in the purity of honey in the liquid form. Before the enactment of national and State pure-food laws, many people would not buy extracted honey, fearing that they were paying a big price for a lot of tasteless glucose or corn syrup; but during the later years all this is changed. Certainly the ten-frame is better than the eight-frame hive for extracted honey. Since honey is becoming more and more popular, why not get into the bandwagon of ten-frame-hive users?

We have also observed that the average beginner and farmer bee-keeper will do better with a ten-frame hive than with an eight-frame — certainly better if he works a single brood-chamber to the colony. We notice, too, that the majority of large producers are working over to the ten-frame size. If they have not already changed, they virtually say that, if they were to start again, they would adopt the ten-frame rather than the eight-frame. There are some others who say that the ten-frame is not big enough, and that they must have 12's. To accommodate these latter people, ten-frame Jumbo hives were made, the same in every respect as the Langstroth, with this exception: The frames are $2\frac{1}{2}$ inches deeper, making an equivalent of twelve-frame Langstroth standard-depth capacity.

There come times in seasons when a single brood-chamber will give better results than one brood-chamber on top of another for the purpose of securing a large brood-nest. It is then that a ten-frame hive stands out clearly ahead of a single eight-frame brood-chamber.

Another thing, during all these years we learned that the colonies in the eight-frame hives very often go into winter quarters very short of stores, when ten-frame hives would have enough. Over and over again we have had to caution beginners who were using the Danzenbaker hive, which is the same capacity as the eight frame Dovetailed, to make sure that their colonies have sufficient stores to carry them through the winter. On the other hand, an ordinary ten-frame capacity will usually have enough if there is any kind of fall flow to carry the bees through at least until the next spring or until the next flow comes on.

Right here it may be asked, on the part of the professional old timer, "Why should he be compelled to use a hive better adapted to beginners, when he from his knowledge and experience can work a smaller hive to better advantage?" We have traveled a good many thousands of miles among bee-keepers, and have been surprised again and again to find the old veterans are just *the very chaps*, sometimes, who will allow their bees to go into winter quarters with insufficient stores. The fact is, they very often have not time to go to the distant outyards and give their hives the needed attention. Now, would it not be better if these same men had larger hives that would be more nearly automatic, that would not require so much "eternal vigilance" and fussing?

Then it very often happens that this same veteran, in the midst of a good honey-flow, finds himself short of hives and supers. If he has only eight-frame hives he is going to lose either two frames of brood or two frames of honey. Taking it all in all, it is our opinion that a brood-nest should be sufficient unto itself in a single section rather than to make it necessary to have to use two hives or two brood-chambers in order to secure sufficient capacity.

We are not sure but that most that is said in favor of the ten-frame would apply with greater force to the twelve-frame or the Jumbo hive of equal capacity. But when we consider that the ten-frame is about all one can handle, so far as lifting is concerned, and that the twelve-frame is just enough heavier "to break the camel's back," should we not rather stick to the standard—that is, standard all over the United States—rather than take something that is odd-sized or irregular?

It would be worth thousands of dollars to the industry if all the hives in this country were standard. What do we find today? Here is Mr. Jones, who, we will say, started with ten-frame hives. He kept on increasing until he had two or three hundred colonies. His business grows, and in the meantime his less successful neighbors want to sell out to him. Most of them have eight-frame hives, and some of them have something else. The bees are offered to him very low, and he buys them out. Now, what has he in his yard? A mixture of odds and ends. Almost any large producer in the country has this condition to contend with, not because it is of his own seeking, but because he was compelled by force of circumstances to buy out those around him.

The management of this journal has decided that it will be saving thousands of dollars, not only to the bee-keepers but to the supply-manufacturer, to encourage standardization; and while this policy may be somewhat inconsistent with our previous policies, we feel it is none too late to mend. If it were not a fact that many of our largest producers were changing from eight to ten frame hives, and we were not also just

as sure that the average farmer bee-keeper and beginner would do better with the ten-frame hive rather than eight-frame, the situation would be different. As it is, we feel it our duty to steer the beginner, at least, right.

UNIFORMITY OF SHIPPING-CASES.

In this general connection there is almost as much reason why the general bee-keeping public should adopt standard shipping-cases. What is the sense in having, for example, two and three row 12-lb. single-tier shipping-cases? Why not adopt one or the other? What do we find on the market today? A double-tier 24-lb. shipping-case, a single-tier 24-lb. shipping-case, a 12-lb. two-row and a 12-lb. three-row shipping-case, a 25-lb. five-row shipping-case, all for the same sections. Every dealer must carry a stock of all these, and this stock is made the larger from the fact that we have $4\frac{1}{4}$ sections, Ideal sections, and 4×5 sections. This is aggravated again by different widths of sections of these three different sizes. Now, *somebody must* pay for this multiplicity and confusion. If the bee-keeping fraternity could see the necessity of adopting standard shipping-cases, 12-lb., and one standard 24-lb., it would save materially in the cost of the cases; and, what is more, buyers generally would be able to quote prices on uniform packages.

Perhaps the same argument might apply with reference to sections, and so on it goes. In a word, we are pleading for *uniformity*. Twenty-five years ago there was nothing on the market except ten-frame Langstroth hives. Mr. James Heddon and some of his followers favored the eight-frame. Gradually some of the manufacturers adopted the eight-frame, we among the rest. We have been convinced that it was a mistake. It would have been better for the fraternity at large if it had stuck to the original ten-frame hive. We can always make an eight out of a ten frame, but we can not convert an eight into a ten frame except by the awkward manipulation of another hive-body of eight-frame capacity. If we have an eight-frame hive, and the bees want ten frames, there is a lot of vacant space left in another eight-frame hive-body placed on top, which the cluster must warm up somehow. They simply can not warm it, and, consequently, brood-rearing during cool nights receives a check.

The time is coming, we believe, when the laws of the country will compel automobile manufacturers to use standard nuts and bolts. A good many of them, as we happen to know, are using special threads, and the only way to get a repair part is to send a telegram and then wait several days before the express companies can deliver it. Hundreds of arguments might be produced favoring a standard. If the ten-frame Langstroth brood-nest were very badly proportioned (but the facts do not seem to prove it), then it might seem advisable to adopt some other form.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

M. T. PRITCHARD, glad I asked the question that brought out those important facts, page 661. That difference in temperature is very important, and I don't recall seeing it in print before.

IN THIS LOCALITY I wouldn't want less than 30 lbs. of honey for outdoor wintering; and if so unfortunate as to feed very late, and had no honey, I'd feed syrup, $2\frac{1}{2}$ parts sugar to 1 part water.

REMEMBER that fine field of sweet clover in picture on GLEANINGS cover for May 1, last? Every spear gone. Horses and cows ate it down so close they killed it. Hardly looks like a noxious weed, does it?

WAX from sugar-cane in sufficient quantities to warrant its extraction on a commercial scale is the latest. It is white or pale yellow; it much resembles in appearance Carnauba wax, as also in its hardness and high melting-point.—*Literary Digest*, 486, (from *Revue Scientifique*).

G. M. DOOLITTLE, you're sound as a dollar about taking bees into the cellar early. If you can take them in toward the last of November, immediately after a flight, that generally is all right; but I'd rather take them in five—may be ten—days too early than one day too late.

S. PRESTON, p. 634, with splinted foundation and split bottom-bar there is no stretching. Neither is there with plain bottom-bar. Wiring might do, if vertical, and with very heavy bottom-bar. You ask the objection to your plan. If I understand, you cut out a narrow strip a little way above the bottom-bar, and wired horizontally. That worked all right with me, but the splinting is a little easier and better.

DR. BURTON N. GATES says in Mass. Bulletin, that with foul brood "the adult bees are rendered inactive, making diseased colonies of bees unproductive." I don't know that I ever saw that statement before, and it doesn't look like good sense, if the brood only is diseased. And yet—and yet—my observation says Dr. Gates is right. It doesn't take a great deal of foul brood in a colony to make them leave their supers empty.

STRAWS for Nov. 1 I wrote in good time, put them in my pocket to mail them, and then—left them in my pocket. That's the second time that thing has happened in the past twenty years, and I must try to break off the habit. [Dr. Miller has been very regular in sending copy for Straws; and when they did not come to hand for our Nov. 1st issue we felt sure that he either must be sick or the mails had miscarried. Glad to know it was neither, even if the joke is on our old friend.—ED.]

UNITING well discussed, p. 644, but not a word about the Miller plan. Of course, I'm prejudiced; it's my baby; but I've tried it thoroughly many times during several years with never a failure, and believe it best of all. Put a sheet of newspaper over one hive and set the other over it, and that's all there is to it. The bees do the rest. No matter whether you do it quietly or noisily, only so you make sure you have all the bees that belong in the upper colony, and that they can't get out any way only down through the paper after a hole is gnawed in it. By that time they will not return to the old stand. Not too late to try it yet, if you have any more uniting to do. I'd like to know if it succeeds as well for others. [In "this locality" we do not need to use any newspaper, even when we do not take the trouble to shake or jar the bees before uniting. If you get some good gentle leather-colored Italians and clean out your blacks and hybrids you will have no trouble about uniting, and little or no trouble, possibly, from the ravages of European foul brood.—ED.]

"GIVE A FEW puffs of smoke, then wait a couple of minutes for the bees to fill themselves with honey, when you may handle them without being stung." That's the sort of foolish advice still too often given, even in books. Bees don't need to be filled with honey to prevent their stinging. A practical bee-keeper hasn't time to wait for any thing of the kind. The smoke frightens a bee so it will not sting, and it does it instantly, before it has time to reach a cell of honey. The other day I took the bottom-racks out of my hives. If I had done it without smoke I would have been stung fearfully. If I had waited for the bees to fill themselves with honey it would have taken three and perhaps five times as long. I worked with one hand while I smoked it with the other, had the rack out, and left the hive, before a single bee had time to load up with honey. [You are entirely right. It is wrong in theory and practice to wait two minutes. In this connection the statement is often made that bees simply can not sting when filled with honey, for the reason, so it is said, that they can not curve their bodies enough to insert the sting. If anybody will take the time to try this experiment he will find that the bees are "on to their job all right." The podding of the honey-sac has nothing to do with the matter at all. It is only incident to a vigorous smoking. Smoke and nothing else is what subdues the bees.—ED.]

OF MY BEST twenty colonies (which averaged 122 sections each up to July 10), ten had last year's queens, and ten had queens of the year before. Thirteen were yellow and seven dark. The very best three were dark. The ten 1908 queens gave precisely the same number of sections as the ten 1909 queens. The thirteen yellow colonies averaged 118.7 sections each; the seven dark colonies averaged 129.9 sections each. This

does not prove that blacks are better than Italians in general, only that, by continued selection, I had bred up an extra strain of hybrids. Now I'm working out the dark blood in hopes of gentler bees.

F. DICKEL has for some years taken up no small space in German journals, saying that the Dzierzon theory is all wrong; that all eggs are fertilized, and the workers make the difference in sex after the eggs are laid. Now he comes out in *Deutsche Imker* with what he considers a settler. In a black colony he shaved the heads off drone brood, shook out the brood, and transferred into these cells worker eggs or brood from a yellow colony. In due time there emerged from these cells yellow drones! Devauchelle, *L'Apiculteur*, 343, gives minute details of experiments in the same line, but he did not succeed in getting drones reared from worker brood or eggs.

A FURNACE in the cellar may knock out your idea of keeping the temperature down to 45. But don't worry if it keeps at 50, and sometimes even up to 60, if you do not keep the cellar opened up enough so the air will be as fresh as outdoors. I've come to believe that pure air is more important than temperature. If too warm, just keep the cellar opened up *big*. [According to our experience, every word of what you say is true. We have never been able, in this locality, to maintain a uniform temperature of 45 degrees Fahrenheit. The temperature has shown a tendency to go up as high as 60, and sometimes as low as 36 or 37. When it reaches the high points we have found ventilation a cure for roaring and general uneasiness on the part of the bees. Our theory is this: When the temperature is between 40 and 45 the bees go into a state of semi hibernation, during which respiration is very low. When it goes above 50 they become active, and consume much more largely of the oxygen in the air, which soon becomes vitiated, and, of course, uneasiness follows. This uneasiness manifests itself in "roaring," and roaring is nothing more nor less than the rapid flapping of the wings to stir up the air to create circulation, and circulation brings in new air. After a time the whole cellar air becomes vitiated, and then it is that the bees fly out of the entrance and all over the cellar bottom. There is no cure for this except a large amount of fresh air.]

In the case of most cellars, especially under houses, is very difficult to maintain a uniform temperature. Unless it can be held steadily within a degree or two of 45, there must be ventilation. The higher the temperature goes, the more ventilation will be required. Of course, it is desirable not to have the temperature go as high as 60 degrees, because the bees get into a condition of summer activity. At such times they will consume too largely of their winter stores. This brings on overloading and congestion of the intestines, finally resulting in dysentery.—ED.]

Notes from Canada

By R. F. HOLTERMANN

BURR-COMBS.

Dr. Miller, page 612, Oct. 1, refers to burr-combs, and objects to having them left year after year, because the bottoms of sections will finally get mussed up. I have another very strong objection to such combs. In handling combs, when replacing them these bits of comb in a crowded hive pinch bees, and much time is lost in releasing the bees, or they are killed. Bees thus held, for hours afterward are angry and make a lot of other bees angry. Is it not probable that the angry bees about the apiary, after manipulations, can be in part traced to this cause?



A FOUL-BROOD ACT IN ENGLAND.

My name has been dragged into a controversy raging in the *British Bee Journal*, concerning the wisdom of having a foul-brood law in that country. Let me say that, at no time in convention, in the apicultural and agricultural press, or in private conversation have I ever suggested that it was desirable to do away with a foul-brood act in Ontario, Canada. That the act could and should have been operated in a better way I have claimed. Recent amendments to the act have been an improvement, and better conditions prevail—conditions which surely could not have been brought about without a foul-brood act and the means to carry it out.



ELIMINATING THE SWARMING IMPULSE.

On page 632 Mr. Fowler has the courage to grapple with this subject. He asks if any one has "tried to breed the tails from lambs. Would this be more difficult than breeding the tail from a cat?" I am not very well posted on cats and cat-breeding, but would like to ask Mr. Fowler if any one *has* succeeded in breeding the tail from a cat. He refers us to the 31st chapter of Genesis for evidence that the swarming impulse can be eliminated by breeding. I see a vast difference in the objects sought. In one, color was changed, but not disposition. In the swarming impulse we have the instinct of reproduction; in nature there would be no reproduction of colonies without swarming. The surest way to convince the skeptical is to produce such a bee. In the meanwhile bee-keepers had better master the art of keeping bees from swarming. Much can be done in this direction. Could not Mr. Fowler develop a non-swarming strain of bees by keeping bees from swarming for several years? [See what Raleigh Thomas has to say on this subject, p. 736.—ED.]

Siftings

By J. E. CRANE, Middlebury, Vt.

That is a good hive-cover as described by Wesley Foster, page 583, for a dry climate or wet one either.

The convention at Albany was a great success. The city hall was crowded almost from start to finish with a large number of intelligent bee-keepers.

Quite right you are, Mr. Editor, when you say, page 543, that the shaking method of treating foul brood is the *orthodox* method, especially for the American kind.

That is a nice point gained for the bees by G. M. Doolittle, page 581, that bees can tear down only such fabrics as contain fiber, and neither the skins of grapes or other fruits are fibrous.

Louis H. Scholl still believes in bulk honey, and it may be all right for the South; but I fear our Northern honey would granulate quite too soon to make this method a success in this latitude.

That discussion of the uncapping-machine is decidedly interesting, page 576, 577; but if I can have all the well-filled combs I can uncap with a steam-heated honey-knife I'll try and not grumble.

On page 546 Mrs. Acklin tells how "to settle the whole problem of swarming at one stroke when the first swarm issues" by taking away the combs, etc. Say! why not settle the whole problem a few days earlier by taking away their brood and not have them swarm at all? I like this way better.

Mr. Root speaks of a settling-tank instead of a strainer, as used by E. D. Townsend. That is a capital idea. We have tried the Alexander strainer, but it works quite too slow or not at all when the honey is thoroughly ripened, and we have been compelled to skim the cappings from the top of large cans, this being the most feasible way to separate the bits of wax from the honey.

It must be a comfort to use a capping-melter and have it work as nicely as described by H. H. Root, page 555; but, "*circumstances alter cases*." I tried to use a capping-melter last year, and it worked first rate for fifteen or twenty minutes, may be half an hour; but after a little the propolis that the bees had stuck to their cappings stuck to the bottom of the melter, and so impeded the flow of wax and honey that I had to give it up. [We have never had any thing like this happen with the Petersen outfit.—ED.]

I was interested, Mr. Editor, in what you say, page 541, about extractors. We have been disappointed in using the four-comb reversible extractor, as we have not been able to extract more honey with it than with the old four-comb non-reversible extractor that I made some thirty years ago. The reversing saves time; but it turns so much harder that we have been unable to make a better record than with the old one.

Our friend Holtermann sounds a doleful note on page 548 in regard to the raising of alfalfa in Ontario, as likely to lessen the honey crop. Cheer up, my brother. Don't you know alfalfa enriches the soil? and it is the plants on rich soil that give us honey. Who knows but that, some day, when the soil becomes filled with bacteria, alfalfa will yield honey here? You say that it yielded honey in Ontario this year, and the reason was because there was so much moisture in the soil. Well, we usually have more moisture than they have in the arid West.

Mr. Wesley Foster inquires, page 547, "How many damage claims do you know of that the express companies have paid?" Well, I know of two that they couldn't dodge—honey shipments, too. You see it is this way: When honey is given them to ship, the agent writes down in one corner of the receipt, "At owner's risk," or something of that sort, or the initials of the words so as to protect them from damage; but we have sometimes turned our express over to the one who delivers, and he forgot to put in the extras, and we were able to collect. But, shame on the companies that resort to such devices to shield themselves from their duty. The original idea of express was to carry valuable articles promptly and safely.

In your footnote to a Straw, page 545, you say that "there can be no question that bees are much more inclined to sting dark garments than light-colored ones;" and, again, referring to your experience at Mr. Townsend's, you say, "We had on a dark suit and Mr. Townsend a light one. The bees attacked us more furiously than they did him." I don't doubt it; but when you say "the observation was made at the time that it was the dark clothing that attracted the bees," I doubt if the observation was wholly correct. Had Mr. Townsend been in the habit of wearing a dark suit among his bees, and a stranger had come in in a light suit, I should not have been surprised if he received more than his share of attention.

In 1883 I had a hired man who spent most of his time in one yard of bees while I spent most of mine in another; and I noticed when I went into his yard to assist him I got more than my share of stings; but when he came to my yard to assist me he was the target, and I felt sorry for him. Bees can be educated, you see.

Conversations with Doolittle

At Borodino

A FEW HINTS ABOUT BEGINNING IN BEE-KEEPING.

I want to begin keeping bees next spring, and wish to prepare somewhat this coming winter. Can you help me a little?

This subject of beginning in bee-keeping is one of vast importance, at least to the beginner. As I look back to my own beginning with bees and think of the many difficulties with which I had to contend, owing to having no one to instruct me, I am willing to do what little I can to help you.

The first aim of the beginner in apiculture should be to post himself as fully as possible by a careful study of some one or more of our best works on the subject. And right here you have the advantage over those of us who began fifty years ago, as there are many good books on apiculture now, and several bee-papers, while there were only one or two of either, then. One might keep bees, and for a time make the business comparatively successful, without this preparatory study; but, like all other occupations, a thorough knowledge of first principles is of the utmost importance, and it will insure success when otherwise failure would be more apt to be the result of the work.

But don't think these books will help very much by a casual reading. They should be carefully studied till they become a part of your very nature, so that, when you commence with the bees next summer, you can put into practical use what you have learned. This study should, of course, be done this winter.

The next step will naturally be the choosing of the frame which you will use. And here you will meet with a diversity of opinions, and it will behoove you to go slow. As a pointer I will say that the Langstroth frame has been used so long, and has stood so well on its merits with our most practical apiarists, that the average beginner will not be liable to make a mistake in choosing that.

If you should start with five colonies in Langstroth hives I would advise getting ten other hives. You might not use all of them the first summer, but it is well to have all you want, should the season prove above the average. As few as five colonies would be my advice, then you can depend on your old business mostly for your income until you are sure with the bees.

The next thing will be a location. This should be in plain sight of the house, and easy of access, so if you allow natural swarming you can see when the bees come out, or so that any disturbance may be noticed at once and remedied. The hives should face south to southeast, if possible; and if the ground can slope that way so

much the better. Then if you can have a piece of woodland or a snug hedge on the west and north sides of the apiary, better still. If these can not be, a tight fence should be built. Bees, when in good condition, are rarely destroyed by cold, but they do suffer much from the disturbance caused by high winds and severe gales, so any thing done to relieve them in this direction is profitable.

I would not set the hives on benches. Make a low stand for each hive out of 2 x 4 stuff. Set the hives on such foundation, and attach an alighting-board to each hive, allowing the same to touch the ground at its outer edge. This will save you many bees from getting lost in early spring, when the sun shines intermittently, on cool days, for bees can crawl into a hive if they have a chance, when they are too much chilled to fly. The space in front of each hive for about four feet should be kept free from grass or weeds, so that the bees may not be entangled on their return with heavy loads of pollen or honey.

My apiaries are arranged on the hexagonal plan, the hives standing ten feet apart in the rows, and the rows ten feet apart. Where space can be obtained I prefer this distance to any other. One can get along with six feet instead of ten, but ten gives elbow room.

On the question of increase is where a great many stumble. They are too ambitious, and want to increase their number of colonies too fast, and simultaneously secure a good yield of surplus honey. The beginner naturally desires rapid increase, and at the same time he also looks for some of those remarkable yields of honey that he reads about. The first he generally secures, and the second he generally does not; and so he is apt to decide that his location is not a good one for honey. Allow me to press home on your mind that rapid increase and a large surplus can not be secured at the same time except in phenomenal cases. Remember that every move toward increase, whether made naturally or by dividing the colonies, is in direct opposition to the storing of large yields of honey.

There are three things which are almost essential for you to know. 1. You want a knowledge of the nectar-producing flora of your locality; in other words, you should know every flower that grows within flight-range, and also its time and duration of nectar secretion. This knowledge will be the key to the situation, and the means by which you can work your bees to advantage. 2. At the time of the blooming of the main nectar-producing flora that yields a surplus above what is consumed by the brood and bees, have the hive full to overflowing with workers right in their prime. 3. Keep the whole working force together, if possible, while this surplus flow lasts. Of course the nectar must be secreted by the flowers, else a crop can not be secured. Every locality has its off year occasionally in this respect.

General Correspondence

CALIFORNIA AS A BEE COUNTRY.

Some Slovenly Methods; No Danger of Overstocking.

BY E. M. GIBSON.

Mr. Root:—In your editorial, Oct. 1, you give the bee-keeping industry of California a black eye. Let us see if there is not a silver lining to the dark cloud. To start with, I will say I have no bees for sale; but I have an offer for all I have, and the one who made the offer got me to promise that, if I should conclude to sell at some future time, I would give him a chance to buy them. I have also had several other offers. I write this so no one will think I am trying to get some free advertising. Bees in this section are the most salable of any thing I know of, notwithstanding the failure we have just had. They bring from three to five dollars in any old hive, and without the purchaser knowing the age of the queens. Those who have ranches to sell try to get bees to facilitate the sale of them. This would indicate that the bee industry is not at so low an ebb as some might suppose.

Yes, we have failures; but I have yet to hear of the country where they do not have them. The failure this year was considered *one* of the worst, and yet I extracted 10,640 lbs. of honey besides leaving at least 5000 lbs. in the supers for a special purpose which I may write about after another year of experimenting. There were scores of bee-keepers who did not get a pound of honey; but it was not the fault of the season nor of the bees. There are bee-keepers outside of this State who would consider the above amount quite a decent crop in a *good* year. Any thing below one case (120 lbs.) is considered a failure here. There are years when we get less; but it is doubtful if we get less than that amount more frequently than failures occur in other sections, for all countries are subject to occasional drouths, and too much rain is also detrimental. I have seen it rain in different parts of the East for two weeks at a time without a day's cessation, just at the time the bees ought to be doing their best work.

It reminds me of what a man told me about Oregon not long ago. He said it rained up there all the time. It rained without any sense.

The cause of our worst failures here is the lack of *late* rains. About the time our surplus-honey flow begins, the weather has become settled, and there are no storms to interfere with the bees working, and they hum from daylight till dark. This is one reason we get such large yields in good years. We bee-keepers should be forehanded enough so that we shall not have to sell all our crop

in the flush years, but hold it over for such years as this. They are sure to come, sooner or later, in all sections of the country, and honey can be kept indefinitely without waste or deterioration, and a large amount in weight can be kept in a small space. This would also help those to get better prices who were obliged to sell.

Bee-keepers here can take care of three times as many bees with the same amount of labor as they can in cold climates, for they do not have to haul them from the out-apiaries and lug them into cellars and return them again in the spring, and they do not have to swathe them in building-paper, chaff, leaves, etc., if they are left on the summer stands; and after all of this labor, many, on opening them in the spring, find half of them dead and the other half in a weakened condition. Most bee-keepers here do not even take off the supers during the winter months, and, in fact, the bees commence to build up in January, and quite often in December. Bees that are left in October with plenty of stores, a good queen not over two years old, and a good hive, will, twenty-nine times out of thirty, be found doing well in February.

Then there is the comfort of the bee-keeper to be taken into consideration, which is a big item to me, for there is much more pleasure in going out any day when the sun shines, and hear the bees humming, than there is in having to bundle up every time one wants to step outside, wade through the snow, and hurry back near the fire for fear of getting his nose frozen. Bee-keepers can work with their bees here practically all the year round.

I am certainly surprised that any one fears that this country is going to be overrun with bee-keepers on account of the writings of Mrs. Acklin. For my part I should be glad to see some bee-keepers come in who intend to make it their special business, and who have some knowledge of the work, or at least would try to learn to produce well-ripened and clean honey, and take the place of those who have gunny-sack rat-holes which they call honey-houses. It would help instead of being a detriment to the business.

I would just as soon have rats and mice running over the dishes in the pantry as to have them running over the utensils in the extracting-room. I do not wish to convey the idea that bee-keepers are any more untidy than the butcher, baker, or grocer who handles the things we eat; but I think it would do no harm to be more tidy than some of them, for the minister's wife said some of the family were sent to the store early one morning for sugar, and the grocer had to shoo the cat out of the sugar-barrel. No doubt she had slept there all night.

A man ate supper with me last evening who said the people where he had been boarding bought a can of honey from a nearby bee-keeper, and he poured a little on his plate at meal time and got five dead bees on his plate. If Mrs. Acklin's writings will

bring about a change from of that kind of bee-keeping I will risk the overstocking part, and would be in favor of voting to help pay for her contribution instead of barring her out.

It is easy for us to persuade ourselves that our particular right is divine, but the demand of some one else to share our right is rebellion against the divine order; but any one with knowledge enough to keep bees successfully will not trespass on another's range, for he would know that such a course would spell failure for one and perhaps both.

Do not think that I by any means include all California bee-keepers as ne'er-do-wells, for a majority produce as fine honey in every respect as can be found anywhere. The class I have referred to would be ne'er-do-wells in any vocation. We can not afford to go to sleep. The struggle for supremacy in all of the industries is on. It is fierce. It will be fiercer, and will eventually end in the survival of the fittest.

Do not be deluded by the pessimist who talks about over-production. If the population of this country increases as fast in the next two decades as it has in the past two there will be scarcely enough nectar-producing plants in this country to supply the demand for honey. I am judging of the future by the past. I could give some statistics by one of our honey-buyers who has bought honey here for thirty years; but time and space will not permit.

Jamul, Cal.

[It was not our purpose in the editorial to which you refer to give California a "black eye," but, rather, to let those who are intending to migrate to your State of sunshine and beautiful climate know that there are some drawbacks, the chief of which is the irregularity of the seasons. We had in mind particularly the locality around Los Angeles—especially the mountain-sage districts. If we are correct, in those districts the seasons have been very uncertain. We believe that your locality is more dependable from what you say than any in and about Los Angeles. Central California, while it does not have, some seasons, as heavy yields as Southern California, seems to average fairly well. Taking it all in all, California is a State that has every kind of climate and conditions; and when we speak of California, perhaps it would be well that we particularize as to locality.

While we may perhaps have unwittingly given the region in and around Los Angeles a "black eye," yet we know of many bee-keepers who have pulled up stakes to move to these "El Dorados" only to find, when it was too late, that it had been better for them if they had remained at home under conditions with which they were familiar. In our last issue Mrs. Acklin pointed out how different California conditions are, so far as bee management is concerned, from those here in the East. This very difference is what makes it hard for a tenderfoot to get in right when he goes into new territory.

A "little bird" tells us that some of your colleagues may get after you. While, no doubt, you have adhered strictly to the facts, they will tell you that you will have a flood of bee-keepers who will spoil the locality. All we can say to these outsiders is, go slow and be careful. Do not pull up stakes, but spend a year with some bee-keeper, leaving your family at home until you see whether you like it or can cope with conditions successfully; then take advantage and hunt up some locality where there are no bee-keepers, and where you will not be trespassing. California is a large State. There is room for more people in it, and for more bee-keepers; but do not make the mistake of squatting down beside another bee-keeper who has long held the field. The old timer will out-distance you every time because he *knows* the peculiar conditions that affect the bee business.—Ed.]

PERFECT CONTROL OF BEES WITH ECONOMY OF LABOR.

The Double-bottom-board System Explained.

BY J. E. HAND.

Continued from last issue, page 693.

Bee-keeping is somewhat different from other branches of rural industry in that we have to deal with creatures whose every act is guided by a mighty impulse—an impulse that neither time nor location can change—an instinct that kings and armies can not overthrow, and yet the very strength of this mighty impulse is its most vulnerable point—the point that admits the entering wedge of man's reasoning power, and makes it easier to control bees than it is to control other domestic animals.

Without systematic effort but little is accomplished along business lines, and bee-keeping is no exception to this rule; therefore, to render the equipment doubly effective there is a system that goes with it. Every bee-keeper in the North knows how difficult is the task of getting all colonies in condition to enter the supers at the beginning of clover bloom. It is bees that gather honey, therefore we should see to it that every hive is chock full of bees at the beginning of the harvest. Remember that 25 strong colonies will store more surplus honey than 100 weaklings; therefore all colonies that are not in condition to enter the supers at the beginning of the harvest should be united with some other colony. There is no more excuse for a bee-keeper to allow a part of his apiary to remain unproductive than there is for a farmer to allow a part of his farm to become unproductive by failing to attend to the simple details of his occupation.

It is true that it requires some skill to control a rousing colony; but it is the rousing colonies that give us rousing crops of surplus honey if we possess the skill to direct their energies in the right channel. To prevent

strong colonies from contracting the swarming fever before the main honey-flow we give them a full upper story of empty combs above a queen-excluder. This will prevent the storing of honey in the brood-chamber, which will be filled with brood.

When the harvest is in full swing, and the top story is about half full of uncapped honey, assuming that each colony is provided with a switch-board we will begin operations for the control of swarming by placing the top story, bees and all, down upon the vacant side of the switch-board, and exchange the central comb for a comb of brood and bees, including the queen from hive No. 1; put on a queen-excluder and a super of sections; close the hives and throw the switch, thus closing the inner entrance to hive No. 1, and at the same time open the inner entrance to No. 2 without changing the appearance of their outside entrance.

The returning field bees, laden with nectar, will enter the new hive through their accustomed entrance without a moment's hesitation, and no time is lost to the bees in getting accustomed to new surrounding, which in the midst of a good honey-flow means a gain of several pounds of honey over other methods where bees are shaken and otherwise unduly excited, by throwing them into an abnormal condition, causing them to sulk and loaf for a day or two, when a colony in a normal condition would show a gain of 5 to 10 lbs. per day.

The switch on the back side is thrown in the opposite direction to provide a new entrance for colony No. 1, which has been so smoothly robbed of its field bees, and which should now be given a queen. The honey in the new brood-chamber will go into the sections to make room for brood.

A strong point in the new system is that the brood in colony No. 1 is held in reserve to re-enforce the swarm; therefore, as soon as a goodly force of young bees are again flying from No. 1, which will be in about eight to ten days, we will throw the switch on the back side, again closing the inner entrance to No. 1, and, opening the inner entrance to No. 2, the returning field bees will scamper into hive No. 2, pellmell, deposit their load of nectar, and scud to the fields as though nothing out of the ordinary had happened. This is what we understand by perfect control of bees.

Hive No. 2 is now crammed full of bees with an entrance at each end $\frac{1}{2}$ by 12 inches, and a one-inch space below the frames, both of which are important factors in solving the problem of swarm control.

The entrance to No. 1 now being closed we will again provide a new one by opening the auxiliary entrance on the side. This will usually settle the swarming question during an ordinary honey-flow; however, should the harvest continue until the brood begins to hatch in No. 2 it is advisable to shift the field bees back into No. 1. This is easily and quickly done by reversing both levers, thus closing both the inner entrances to No. 2, and opening both the inner entrances to

No. 1, transferring the supers (bees and all) over to No. 1. The entrances to No. 2 being now closed, we will open their side entrance.

All four entrances are now open, and the side entrance to No. 1 may be closed in a day or two; otherwise it will serve as a check to the next shift. Since the bees that have a habit of using that entrance will not be shifted by the levers, these entrances are also used as safety-valves against the possibility of weakening a colony so as to cause the loss of brood. It will be noticed that, after the first shift, positively all that is required to control swarming is to throw the switches once in eight to ten days and transfer the supers. The hives being so close together, this can be done without moving from one's tracks; however, during a good honey-flow it will, perhaps, be necessary to add an empty super at each shift, which may be placed at the bottom, and the partly filled ones (bees and all) on top.

At each shift a strong force of young bees is called into action to re-enforce the swarm, which is steadily increasing in numerical strength instead of decreasing, as is the case with natural and shook swarms. If no increase is desired, no queen is given to No. 1, from which the bees are shifted over into No. 2 at intervals of ten to twelve days. After the second shift but few bees will remain, and the hive and combs may be used as desired.

A noticeable feature of the system is that the double entrances always go with the strong colony, and the small side entrances with the weak one. As a further aid to swarm control we usually raise the back end of the cover during very hot weather. Thus the field bees may be shifted back and forth from one hive to another automatically at intervals of eight to ten days without disturbing their equanimity in the least, or interfering with the serenity of their usual occupation.

Again, this is what we understand by perfect control of bees. Sectional hives have no advantages under the new system, since the new principle reduces frame-handling to the minimum, and entirely precludes any necessity for handling brood-chambers. Birmingham, Ohio.

To be continued.

A BEE-LINE STRAIGHT UNDER FAVORABLE CONDITIONS.

Conditions Under which it is Made to Deviate from a Straight Course; an Interesting Discussion.

BY RALPH P. FISHER.

Compared with my experience, the definition of a bee-line as given in Dr. Miller's *Stray Straws*, p. 612, October 1, is very misleading. The investigations of one Felix Plateau, and the footnotes of the editor, I fear, are not quite complete, wherein the following is offered to strengthen the point at issue. In hunting bee-trees the bee-line

is the essential factor of the hunter's success. I will dispute the statement that bees beginning a circuitous route will continue to go and come by that same route, placing such occurrences as the exception and not the rule.

In the lining of some 800 bee-trees I have the first time to notice bees traveling in a circle or circuitous route, though frequently I have found them forming angles in flight. Flat lands and mountains are here grandly mixed, wherein the bee-line can be observed in all peculiarities.

My experience shows that bees invariably seek the shortest way home, adopting the route that offers the least obstruction in the way of trees, etc., on windy days especially; for on still days they fly high enough to pass over the tallest timber, in which case they invariably fly straight.

As I line bees by sound rather than sight I have come to judge a bee-line most accurately, and know they conform to a straight line just as soon as circumstances will permit. The wind or the air currents alluded to by the editor are, in every case, responsible for bees flying in other than straight lines.

In the fall, some time after a late flow of nectar, there are many young bees flying about the fields seeking their first load. If one of these bees is caught and allowed to fill up with honey it is very likely to return by the route it came. If this same course be other than straight, the line will conform just as soon as some old bees that know the surrounding country begin making trips from the supply to the tree or hive. Young bees, very soon after birth, early learn to follow the older ones in any specific duty or direction. Once I lined bees from a field at the foot of a mountain across a valley to a bee-yard two and a half miles distant. Between this field and the yard was a swamp filled with very tall timber, being nearly a mile wide and a good half-mile from where I set up my hunting-box. When the bees started from the box their line of flight was somewhat more than 30 degrees to the right of an air line to the farmer's yard. The yard being known, and the line-way to the right, I naturally supposed the bees were those having an abode in the edge of the swamp. A long search failed to locate the tree, however. As the season was very late I did not give the bee-yard any consideration, yet my efforts to find a bee-tree were fruitless, and I gave the cause to the wind. The next afternoon being exceptionally mild I went back to retrieve my failure of the day before. The day being much warmer, more bees were in flight, and I was not particularly surprised to note a material shift in the direction traveled. To-day I could follow them by sound, where, the day before, I had to depend on sight. At any rate I easily followed them to the farmer's bee-yard. The diversion of flight on the second day was simply another case of bees adapting themselves to circumstances; for when the wind blew they kept close to the

ground and went around the timber; but when the wind was still they were quick to take the straight course over it. In going around the timber the bees did not travel circuitously, but straight to a distant point. Then, making an angle, continued straight to another distant point, and so on home.

Never yet have I caught them making a long curve; but invariably, and while wind was present, I found them cutting angles, always close to the ground, where the wind's sweep is less violent.

That the supposed and popularly accepted bee-line is the course of bees through air, and always straight, is more true than otherwise—so much so that my experience proves the continued use of it as a comparison to be safe and orthodox.

Vienna, N. J., Oct. 11.

VEGETABLE WAX.

BY J. FORD SEMPERS.

Reference has been made concerning the presence of wax in plants, and I am reminded that we have in our eastern flora several species of wax-bearing plants. That is, the secretion is much more prominently exhibited than by the delicate coating on fruit and leaf. The myrtle wax of commerce is a product of two species of *Myrica*—the bayberry (*M. Carolinensis*, Mill.) of the Atlantic coast States and shores of Lake Erie, and the wax myrtle (*M. cerifera*, L.) having the same range along the coast.

These shrubs and low trees are found in light, sandy, usually wet, situations. They are well known, both for the fragrance of the leaves and the hard wax-covered fruits they bear. Just how many of these little berries, scarcely larger than a mustard seed, would be required to yield a pound of wax is something of a conundrum to me. In the early days of our country, wax for domestic use was derived from these plants, and candle-berry was one of the local names applied to them. At the present time they still yield tribute to those who have the time and opportunity to gather the fruits. The wax is separated by boiling in water, which process is repeated several times before the product becomes the bayberry wax offered for sale. In burning, the wax emits a pleasant aromatic perfume.

I have often wondered that the bees, in their propensity to daub every thing in the hive with propolis, had not made use of this easily accessible supply of wax. Occasionally I see a few bees coming in loaded with what to all appearances is this wax, or a very light-colored propolis, which I have not yet been able to decide.

Aikin, Md.

[There is no reason why, some seasons, bees would not gather this wax. We know that, during a dearth of honey, they will pull off bits of wax from old brood-frames and other hive parts. Yes, they will gather

wax when they can get it, the same as they will appropriate gums for their propolis work.—ED.]

A NOVEL AND A SIMPLE METHOD OF HIVING A SWARM.

How to Make a First-class Swarm-catcher Out of a Common Bushel Basket and a Forked Pole.

BY E. R. ROOT.

While I was up in Northern Michigan, among other persons I called upon was S. D. Chapman at Mancelona. Our newer readers may not remember him, perhaps, as one of our old correspondents and one of the leading bee-keepers of Michigan. Our friend explained, when I arrived, that this had been an off year, and that his bees had not done much if any thing. The season looked very propitious during the spring and early summer; but the drouth, coming just when it did, practically spoiled the honey crop.

While we were sitting on the porch talking, one of the members of the household remarked that a swarm was out. Now, I have seen swarms hived hundreds of times; but almost every bee-keeper has his own way of doing the trick. I said to Mr. Chapman, as we moved out to the bee-yard, "I should like to see your way of doing it."

"Well, now," he said, "you have come at just the right time, for I have not had another swarm during the whole season."

So saying, we proceeded to the bee-yard. We found a fairly good-sized swarm on a fruit-tree near one side of the yard. As there had been no other swarm that season, Mr. Chapman said he had no swarming-pole, and he would have to cut a sapling from the woods near by. In a few moments he came back with a small tree which he was trimming up into a long straight pole with a fork on the end. The pole when finished was between twelve and fifteen feet long. He next went to the barn and secured a common bushel basket. One handle of this he hooked over on the end of the fork of the before-mentioned pole, and then proceeded to shove the basket up under the swarm, as shown in the lower right-hand picture herewith. When the basket was clear up against the limb he gave the pole one quick shove upward, dislodging perhaps three-fourths of the bees. Three or four more upward pushes dislodged all the bees, as will be seen in the middle picture at the bottom. When the bees began to roll over on the outside, he drew the pole down; and when the basket was within reach he held it up for my inspection. "There," said he, "that is the way I catch my swarms." He then dumped it in front of a prepared hive and the work was done.

In the first place, you will remember that he had no swarming-pole, and rigged up an outfit inside of ten minutes that is probably nearly the equal of any thing that has ever

been made. Bushel baskets are usually available around every farmhouse; if not, they can be bought at an insignificant price. A small sapling, perhaps one inch in diameter, comprises the rest of the outfit. The fork at the end must have the prongs long enough so there is no danger, during the process of jarring the swarm, of unhooking the basket.

The upper view shows the bee-yard, the bank barn, and the honey-house and workshop on the left. Beneath the honey-house is his wintering-cellar.

Mr. Chapman is too well known to need very much introduction here. He is regarded by bee-keepers of Michigan as one of the most successful farmers and bee-keepers in the whole State. He apparently does not follow Mr. Hutchinson's advice to keep more bees. He would have been left high and dry this season if he had. While he has two or three outyards he has a fine farm which he operates in connection, and apparently this kind of combination is particularly advantageous when there is a poor season with the bees.

The general appearance of the farm would indicate that Mr. Chapman makes it pay, and pay well. When I see fine buildings, land that is not overgrown with weeds, a well-kept home, and a neat pretty apiary—well, I know their owner is more than making ends meet. When I asked the liveryman if he knew where Mr. Chapman lived, he said, "Oh, yes! he is well known, and is one of the most prosperous farmers in these parts."

If there had been more time at my disposal I should have been glad to show Mr. Chapman doing some stunts with his bees; but it was necessary for me to leave that afternoon.

A VISIT TO A BLIND BEE-KEEPER.

He drove me across country to a railroad station by the name of Alden. He there introduced me to a Mr. John Armstrong, a blind bee-keeper, who has been without the use of his eyes for thirty years. Wonderful to relate, this man has some thirty or forty colonies which he handles almost alone. His blindness was due to a premature mine explosion as a young man. While he has not seen the light of day for many years, he seems to enjoy life, walks all over town, goes all through the Michigan woods unattended, finding his way apparently without difficulty with his cane. Of course, in working with his bees there come times when eyesight alone is indispensable. Fortunately his little son is able to give him material assistance.

Most men would be utterly discouraged after losing their eyesight; but Mr. Armstrong made up his mind to make the best of the situation, and he did. He would shame any one possessed with two good eyes who would complain that he did not have any chance in the world. He is a sample of a kind of courage and determination to overcome difficulties that is altogether too rare.



S. D. CHAPMAN'S APIARY, NEAR MANCERLONA, MICH.; HIS METHOD OF HIVING SWARMS WITH A FORKED POLE AND A BUSHEL BASKET.



A BUSINESS MAN'S APIARY IN TEXAS, WHICH YIELDED OVER \$450.00 WORTH OF HONEY, ALTHOUGH THE BEES RECEIVED ATTENTION ONLY AFTER BUSINESS HOURS.

A BUSINESS MAN'S APIARY IN TEXAS.

BY TOM BURLISON.

The engraving represents my apiary in town where I spend many pleasant and profitable moments after business hours. I have 41 colonies, which are run for comb and bulk comb honey. I averaged about 100 pounds per colony this last season, which netted me over \$450 in all.

The yard is located just 20 feet from the back porch, the building to the left being the honey-house. A large hackberry-tree shades almost the whole yard from noon until evening. The cedar-tree at the right is a favorite clustering-place for swarms.

The solid fence on the north keeps out north winds and also causes the bees to fly a little higher. The rest of the yard is enclosed with a low fence, only high enough to keep the babies out until they get acquainted with the bees.

Waxahatchie, Texas.

A GOOD SHOWING FROM ONE COLONY OF BEES.

BY W. H. GREEN.

The 33 Langstroth combs shown in the engraving, and the two supers with sections, were all from one colony of bees. The combs were very thick, as they were spaced far apart in four stories, the comb-honey supers being on top of all. The whole amount was 325 lbs., all of it being fine quality of thick white-clover honey. Several of my colonies did as well.

I am selling my honey readily at a good

price. I can see a big improvement since the pure-food law went into effect, as the people are anxious to use more honey and are willing to pay more for it than before.

Marysville, Ohio.

INCREASING THE SIZE OF THE CELLS TO MAKE LARGER BEES.

BY THE JUDGE.

Bee-keeping is not new to me. I am not a beginner, neither do I know it all. My first experience was in the fall of 1884 and spring of 1885; and since then I have handled bees more or less—in 1887 and 1888 under that past master, A. E. Manum, and for the last few years merely for the fun of it as an amateur in the city. My success has been varied, generally more of pleasure than honey; but of the latter I have produced as high as 750 lbs. of extracted honey from six colonies, spring count, and increased the same to fifteen.

Now, if it is true that bees raised in drone-cells under forced conditions are larger than those raised in ordinary worker-cells; that worker-cells range 25 to 29 to the square inch, and drone-cells 17 to 19 to the square inch, why not make worker-cell foundation 22 or 23 cells to the square inch, and so help increase the size of the worker bee?

SIZE OF THE FOUNDATION SHEET.

I find that the light brood foundation which I have been using is not large enough. It is more than $\frac{3}{8}$ inch above the bottom-bar of the frame when fastened in the slot at the top of the frame; and the bees do not build it down to the bottom-bar. It is highly desirable to have the combs

clear down to the bottom-bar, for many reasons, and I know of none opposed. A scant $\frac{1}{8}$ inch at the ends is all right, and I shall have my foundation cut so as to hang within $\frac{1}{8}$ inch of the bottom-bar hereafter, and try to get combs built clear down.

WIRING FRAMES.

Nearly each one has some particular way of doing similar things. Now, in wiring frames I use only three wires. The frames come bored for four, but I do not find the top one necessary. I believe the slot and wedge of the Hoffman frame to be the most perfect manner of fastening the foundation at the top, and I have no trouble whatever with its sagging between the top and the first wire I use—the second in the frame. There is a slight sagging in the middle of the frame between the two lower wires. I have recently examined a lot of combs which have just been drawn during an August flow from goldenrod, and I find them all good. They have been filled with brood and honey, and are fine except the wasted $\frac{3}{8}$ inch above the bottom-bars.

FEEDERS.

I use a two-quart Mason improved glass jar, the kind having a glass top, with screw cap. Take off the glass, put on two rubbers, a fine perforated tin in place of the glass, and you have a feeder that works

fine. Invert it over a small board with hole therein slightly smaller than the top of the jar. For spring stimulative feeding you can feed just as slowly as desired by adding a pasteboard inside of the perforated tin, having a hole therein of such size as will give the result desired. No heat is lost with this kind. It can be put right over the cluster, and two quarts will last a week.

RABBETS.

I use galvanized iron, cut half an inch less than the inside width of the hive. A piece $1\frac{1}{2}$ inches in width is folded over $\frac{3}{8}$ inch, but not pressed together. When nailed on the inside of the end, this folded edge rests on the wood and the nailing will always hold. A heavy frame may be dropped on it without bending or knocking off. I find it strong and very durable, and it does not cut fingers as sharp edges do at times. They are cut short so as not to be filled at ends with propolis so quickly.

Barre, Vt.

[Increasing the size of worker foundation in order to get larger bees has been tried. In the first place, we are not sure that larger workers would be desirable. Second, larger cells do not seem to accomplish such a result. The bees try to rear drones in them, mistaking them for drone-cells; but they make bad work of it, and finally give the thing up in apparent disgust.—ED.]



SURPLUS HONEY FROM ONE COLONY.



NATIONAL BEE-KEEPERS' CONVENTION, ALBANY, N. Y., OCT. 12, 1910. REPORT OF THE CONVENTION LAST ISSUE, PAGE 697.

SHIPPING LONG DISTANCES BY FREIGHT.

Building a Separate Floor in the Car for Each Layer of Hives.

BY VIRGIL WEAVER.

From late fall until early spring one can ship colonies of bees in single hive-bodies. First, all bottoms (placed deep side up) should be nailed on tight. I use four crate-staples, two on each side, at an angle of 45 degrees. By having the staples slope in opposite directions the hive-body will be kept from slipping either backward or forward. This is quite important, as any slipping would tend to release the bees.

If the frames are self-spacing, all is well. If the colony covers more than four combs and less than eight, take out one of the eight combs, pressing the remaining ones to each side of the hive, leaving a space in the center for the bees to cluster in. I press the combs tight to the sides of the hive and nail each inside frame with a 1½-inch nail. If the colony covers eight or ten combs, I take out two combs instead of one.

In warm weather, when the colonies are strong I place a deep super on top of each colony and nail the two bodies together, in the same way that the bottom-boards were nailed on. I remove every other frame from the super and nail the others, after spacing them equal distances apart. For so large a colony we do not remove any combs from the brood-chamber since there is clustering space in the super above, but force all of the frames to one side and nail the outside frame to hold the rest firmly together. If the combs should be stuck together with burr and brace combs, the nailing would not be necessary, especially in ten-frame hives.

Instead of a cover I make a frame of ¾-inch stuff that fits the top of the hive, and tack a wire screen over the frame, held on securely with thin strips nailed on top. This gives a ¾ clustering-space at the top, so the bees can not crowd too closely against the screen, and thus smother. When this screen frame is nailed tight to the hive, and another screen nailed over the entrance, the colonies are ready for shipment.

In cool weather a box car may be used; but in warm weather a stock-car is best. To load the car, place a layer of hives over the bottom, making sure that the frames are lengthwise of the car. About 120 eight-frame hives can be put in one layer in an 8×36-foot car. Before the second layer is put in, it is best to build a floor above the first layer by nailing 2×4's crosswise of the car over about every other hive, turned flat side down. Then cover the entire space with good strong lumber for a floor. Buy this lumber in 18-ft. lengths if possible; if not, three 12-ft. lengths will answer. It is best to make a new floor over the whole car, then the next layer of bees can be placed on it, as on the original car floor. The lumber for the floor should be toenailed to the ends of the car rigidly, as it must not move a particle. I do not think it best to put more than three layers in a car.

The solid floors for each layer will keep out the light, and will also keep the heat from the lower hives from injuring those in the upper part of the car. This is an important advantage; for if any colonies smother

or they are always the ones on top. It is best to cover the top layer of hives with something to keep out the light, as the light makes the bees crowd to the top, and this is what plays havoc. If the colonies are packed solid in a stock-car, there will be no need of spraying the screens to cool off the bees.

In the year 1905 I shipped 130 colonies of bees 750 miles and lost only 11 colonies; and even this loss could have been prevented if the combs had been removed according to the plan above. They were shipped September 15, with a minimum temperature of about 85 degrees during the time they were on the road. The trip took in all 66 hours.

I found it was quite handy to have a few pails of honey to give to the railroad men when I wanted a favor. Making transfers is the hardest part for the bees. It is a good plan to climb into the engine-cab and ask the engineer to handle his train as easily as possible, and then give him a bucket of honey for his trouble.

Valley View, Ky.

A THREE-WHEELED HIVE-CART.

BY R. V. COX.

The engraving shows the kind of cart I use in my bee-yard. I like it better than any thing I have ever tried, and it is away ahead of any sort of wheelbarrow.

The upper view shows it loaded with ten-frame supers, the third wheel taking the weight off the arms. There is a brake on the large wheels that can be set so as to hold the crate anywhere. With such an apparatus as this there is no skinning of knuckles on a swinging honey-house door when taking supers in to be extracted.

The lower view shows the long comb-box which is provided with a cloth cover.

Sloansville, N. Y.

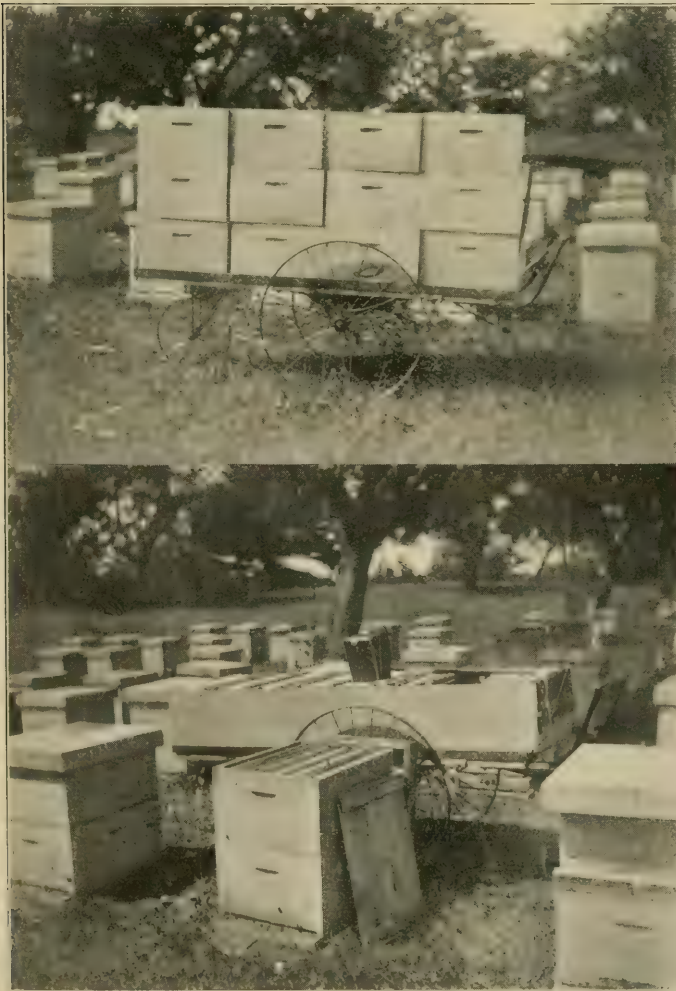
BEE-KEEPING AN AID TO HEALTH.

BY DR. A. F. BONNEY.

Some small knowledge of medicine, coupled with a habit of observation, has shown the writer that when the average person begins to lose health he also parts with hope, and dies all the quicker on account of it. I have done surgery without an anæsthetic for Indians which would have almost killed a white man from shock, yet under other circumstances the red man would die. Let one of them contract tuberculosis, or have a severe pain which he does not understand, and, covering his head with his blanket, he will sit for hours. It is a demon that has possession of him. The medicine man of the tribe was not able to drive it out, even by the aid of the skin of the serpent, and hope left him.

The white man is wiser only in degree. He will not, it is true, cover his eyes from the light, fearing, even in daytime, to catch a glimpse of the spirit which has possession of him, but I have seen tubercular patients who were well able to ride, walk, and row, sit and mope, hopeless of recovery. Had they adopted sanitary methods they would, very likely, have recovered. Some others, men, devoted their waking hours to dissipation, seemingly believing that King Alcohol would burn out the other evil. They died, of course, while a sane life, one of exercise and diet, might, and in many cases surely would, have aided them in shaking off the disease.

The beginning of my bee-keeping career found me weighing 110 pounds heavily dressed. To-day I weigh 165 in fighting clothes, and they weigh no more than the bees compel. While I still have some asthma, I am a comparatively well man, and able to work all day in the yard.



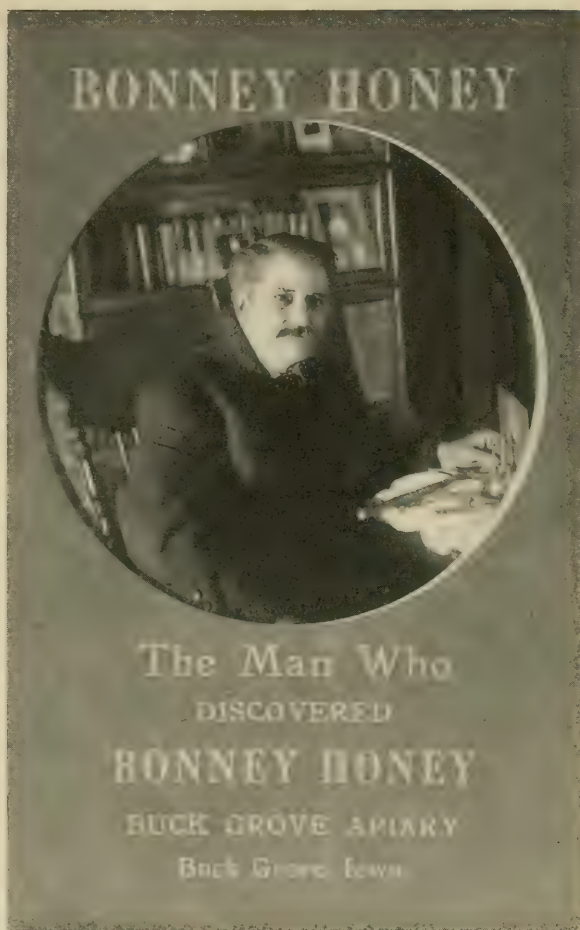
COX'S THREE-WHEELED HIVE-CART.

I could extend this article indefinitely, but it is not necessary, for I can state briefly that there is a fascination about working with bees which causes one to forget his ills, and work, even when hardly able to crawl. This is not levity, for I have wrestled with my bees when hardly able to put one foot before the other from lack of breath, thus bringing on a healthful fatigue which insured sound slumber—nature's most certain way of causing repair. I am not prepared to say that the bee-sting poison I absorbed had any thing to do with my recovery, but I think not, for I still have the asthma. Rather was it living in the sunshine and fresh air. My increase in weight may have come from quitting the use of tobacco, and I shall always think the constant use of honey while I was at work (for I am very fond of it) had much to do with my ability to quit a habit I had had for fifty years.

To those who are ailing let me say, get bees, and do not stop with one swarm, as we generally advise beginners, but get several hives so that you will have something to do all summer. One swarm will not give the necessary work, for the bees would not survive the handling you would give them. Put your bees in good chaff hives so that you will be able to judge with some degree of certainty as to what to look for in the spring, for no common cellar will serve to store them in, and there is too much real work and uncertainty about wrapping hives in tar paper or any thing else for me to recommend the procedure to a beginner. In the spring, when the bees swarm, chase them; gather them in and hive them, and you will find that, when the season is over, you will be improved in health and spirits, and possibly in wealth, for there is good money in keeping bees, as many a man can testify.

I am enclosing a photograph, showing at least that I am in good health. I am using this post card as a local advertisement. Locality is getting to have a wide significance in the case of "Bonney" honey, for a railroad man told me recently that the boys talked of it away out in Montana. This may have been a cheerful prevarication, but it sounded good to a beginner, to say the least.

Buck Grove, Ia.



DR. BONNEY'S POST CARD WHICH ENABLED HIM TO
SELL HIS HONEY FOR 10 CTS. A POUND ABOVE
THE COST OF THE CANS.

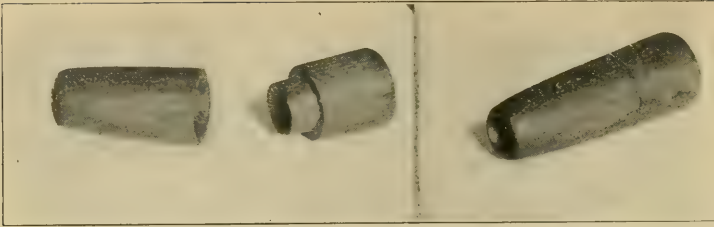
A QUEEN-CELL MADE ENTIRELY OF WOOD.

BY JULIUS MABRAY.

I am sending a wooden queen-cell of my own make. As you can see, the upper part can be pulled off and the lower part grafted with a larva in the ordinary way.

My desire was to have a queen-cell which would protect the unhatched queens from being destroyed by the first queen that emerges. These cells can be given to a strange colony, and, besides, they are safer to handle. They are so small that I can place them between two combs without fear of crushing, as often happens when ordinary cells are used.

I have raised queens in three ways in the same hive, all of which were good ones, but it so happened that two of the best ones came from the wooden cells. This only goes to show that there is no objection to such



A QUEEN-CELL IN TWO PARTS, CONSTRUCTED ENTIRELY OF WOOD.

cells as far as the quality of the queens is concerned; also, in the feeding of the larvæ by the bees I can see no difference.

I believe the wooden cells are as much ahead of cell cups as cell cups are ahead of natural cells.

Youngstown, Ohio.

[Perhaps there would be no objection to wooden cells made in two parts, as these are, so far as the actual rearing of queens is concerned, but it would seem to us that they would be more expensive and no better than cells built by the bees from cell cups and then enclosed in wire queen-cell protectors in the ordinary way.

There is another point which may or may not be important. The natural cell is at first very shallow; and if it were best to have a deep cell from the start, it would seem as though the bees would make them this way.

—ED.]

EIGHT, TEN, TWELVE, OR SIXTEEN FRAMES—WHICH?

A Plea for a Two-story Light Frame Brood-nest.

BY R. C. AIKEN.

For some time I have noted with pleasure that bee-keepers are finding out the value of large hives; and it has given me much satisfaction, also, to note that the editor is beginning to advocate them. I believe it is a step in the right direction. I wish, however, to offer a warning against what seems to me a mistake; and that is, a change of hives to ten or twelve frame. I think there is not the least necessity of discarding the eight-frame hives for any other width; on the contrary, to do so would be a serious mistake. A hive using eight frames of Langstroth length gives an abundance of lateral space; but if such a hive could be shortened, and the amount cut off added to the width, making a body of equal length and breadth, the horizontal shape and measure would, in my opinion, be more nearly ideal. Then I think the height should be doubled to the depth of two eight-frame hives. So far as the bees are concerned, an ideal hive would be one circular in form, about 12 to 14 inches in diameter, and 2 ft. high. Such a hive would conduce to the best wintering and the most rapid building-up in the spring; would give the greatest

economy, and would best preserve the interests of a colony put into it and allowed to continue there undisturbed by man from year to year, just filling up and swarming at the will of the bees. However, when it comes to manip-

ulating a hive, the form that will more nearly maintain and conserve these ideals, and at the same time allow us to get surplus in the best shape and quantity, must be changed somewhat from the ideal brood-chamber form. The Langstroth frame, if shortened a little, would be preferable; yet with a hive approximately 12 inches wide and 18 inches long (most manufacturers put out a hive about $12\frac{1}{2}$ by $18\frac{3}{4}$), the change is not radical from the ideal lateral capacity throughout; though, as I said before, if we could get a satisfactory super adjustment I should prefer a brood-chamber measuring about 12×12 .

I most heartily agree that the eight-frame Langstroth hive is too small for best results. I have arrived at this conclusion after thirty years of experience, practicing on a large scale, and most of the time with from two to four kinds of hives in use throughout nearly the whole period, both in Iowa and in Colorado. I have myself devised many styles and sizes of hives and various combinations; in fact, I have spent a life of experimenting, and reading nearly all that has been written on the subject of hives in the various journals and books. I have had a very extended experience with both Langstroth and American hives, the former being a long, narrow, shallow style, and the latter almost square, and deeper than wide. Then I have made and tried almost every combination of both of these, including the wide end-bar and close-fitting frames, deep and shallow style, hanging and standing, and also the divisible hives.

The objection has been made to the divisible hives that queens will not lay freely when going from one set of frames to another—that they will start brood laterally rather than perpendicularly in the two sets of frames. I certainly consider this a mistake, as there need be no fear of queens refusing to pass from one set to another if there is not all the room wanted in the first set. My experience is, moreover, that bees will spread up and down, especially down, through two and three sets of combs, making a very high and narrow brood-nest. This is just what we would expect to be the case, and my experience proves it. If any one has had a different experience I am inclined to think it the result of lack of proper management or manipulation. I am led to believe that many apiarists, in using two hive-bodies for a brood-chamber, putting one over the oth-

er, too often put the second one on top, which, in nearly every case, is wrong. The second brood-chamber should be placed beneath the one the queen is occupying. Then with the tendency to store honey above the brood, together with the disposition of both fielders and young bees taking flights to mass about the entrance, the queen will readily follow *down* with her egg-laying.

I have mentioned above the tendency of the colonies to store honey above the brood. Now, note that, if the horizontal measure of the hive is such that ten, twelve, or more frames are used, there is too much room at the sides, and the outside combs catch too much honey. Eight frames are enough, and perhaps really too much. At any rate, I believe it would be a sad mistake to enlarge the hive by adding frames at the side. Several years ago I settled on a divisible hive that is 12 inches wide by 16 inches long, such a hive being about as short as advisable for a satisfactory super length. I use for brood-chambers from two to four of these bodies, the frames of which are 5 inches deep, making respectively from 8 to 16 Langstroth comb capacities. Sometimes I want to use but one section of the hive, but usually I have two when a surplus is being stored. For fall, winter, and spring three seem preferable; though if the fourth one is put on, no harm in the least is done.

Here is what I have discovered is the result so far as the storing of honey and work in the super is concerned, when the brood-chamber is composed of three or four stories. I put the section having the most brood in it at the top (if the section is not full of brood I make it full by exchanging these empty or broodless combs for others that are filled with brood from other sections). Thus all the empty brood-combs which the queen can use are below, and the honey that comes in will then be stored in the super above the section full of brood. I do not mean by this that there will never be any honey stored below the brood, for it might happen that, in a rapid flow, there would be honey stored and sealed in some of the lower combs, but in moderate flows the nectar coming in will be unloaded into these lower combs, and then at the first opportunity be taken up into the super combs before being sealed. Just at a time when the flow is rapid is the time of the whole year when the very smallest brood-chamber is needed. At all other times, especially when brood-rearing is to be encouraged, it is best to give unlimited comb space below the brood.

Now, why should we discard the eight-frame hives when so many bee-keepers have them, especially when they can be made so much cheaper than the wide ones, and when better results can be secured in almost every way by using two of them? I know that two of the eight-frame bodies make the brood-chamber a little large at times; but with care to have the brood massed in the upper body at the proper time, and remov-

ing entirely one of the bodies, fine results can be secured in the super. I know that the double-story brood-chambers will permit better control, and better results will be secured in every way than with a Jumbo body in which the combs are all in one set of frames.

Remember that the two-story brood-chamber requires but one extra body and frames, and it is but little more expensive than a Jumbo body. Then when to this is added a wood-zinc honey-board to confine the queen to one of the bodies when desired for any purpose, we have a far more controllable hive than if the brood-chamber were all in one; and for making increase, taking the extra body away just when it is the right time to contract for super work, is the best way yet.

Mr. Editor, please do not advocate those massive wide hives when a far better result is secured in a double-story eight-frame hive. I do not mean that there are no longer any improvements that can be made in the regular eight-frame Langstroth hive, but I do mean that there is not the least use in having any other sizes of bodies, bottoms, or covers.

Loveland, Colo.

[See discussion of this question in the editorial department.—ED.]

THE TEN-FRAME HIVE PREFERRED.

The Proper Manipulation for Extracted-honey Production.

BY P. C. CHADWICK.

Eighteen years of observation in the East, and seven in Southern California, has led me to some very decided opinions as to the size and management of hives. However, whatever I may pen for these columns from time to time will be from the standpoint of California, which I regard as having conditions peculiarly its own.

I will not try to settle the question of proper dimensions of hives or frames, but will be satisfied to say that, as bee-keeping has made steady advances since the venerable Langstroth gave us the frame which bears his name, and as the great majority of all hives in use are of this pattern, it seems to me we can do no better than to doff our hats to the memory of this grand old benefactor, and discuss some things relative to the capacity of hives for these frames for best results.

The eight-frame hive need not be considered longer than to say that, for conditions as found here, I do not see why any one should prefer an eight-frame for either comb or extracted honey. The ten-frame is the standard, and will doubtless remain so from the fact that there is too much invested in this size as a standard to pay to make a change, if for no other reason.

The burden of this article will be on the ten-frame size, though before discussing this

let me give some opinions on the twelve after three years of experimenting.

The advantage is found chiefly where an excluder is to remain on all the year, or where it is preferred to remove surplus supers during the winter months.

In the first place, a ten-frame is not sufficient for brood room here where the bees begin to breed up early in the year, and do not cease for lack of bloom, as is often the case in the East between the fruit and clover bloom. Where the supers are removed the same condition prevails as under an excluder, so far as brood room is concerned; but the necessary stores are lacking to keep things booming during the cold foggy days that keep the field workers in before the main flow begins; and this is no small item, for we have much of this weather in February, March, and more or less well into May of wet seasons.

To sum up the matter of a twelve-frame hive, I may say that I do not think it has any advantage over the ten-frame where it is manipulated as I describe below, but, on the contrary, has the disadvantage of being bulky and unhandy. The excluder should be removed as soon as the honey-flow is over, and one super left on above the brood-chamber, allowing the bees and queen to have unrestricted freedom of the hive. There is little question but that the tendency of the bees during the late summer and fall is to store largely in the brood-chamber whatever they may secure, where the excluder is left on during that time.

There should be no great hurry to get the excluders back on in the spring. Leave them off until, say, ten days before beginning to extract, for this in itself will have a tendency to hold back swarming by giving the queen plenty of room to keep busy.

Usually brood will be found in anywhere from 7 to 17 frames, and a large number of colonies will have from 10 to 14; in others there will be 7 or 8 frames above and none below. Be this as it may, the queen should be gotten below the excluder; but no effort should be made to get the brood down. The more room below, the better for the future, and the less the tendency to swarm before the combs are ready to extract. If the bees can be kept ahead by the use of the extractor there will not be nearly the trouble with swarms.

Extracting can be done, if necessary, before the brood all hatches, provided it is sealed; and by the time the second extracting is ready, the upper story is free from brood.

A better way, if there are surplus combs, is to place a super of empty combs under the super nearly filled, and allow the remaining brood to hatch while this second super is being filled.

In this way a very large amount of brood is allowed, so that there are bees on hand early. Then with the ten frames of brood space below, the colony will remain in a booming condition during the entire season.

Redlands, Cal.

HONEY ADVERTISED BY THE NATIONAL ASSOCIATION.

\$50,000 Would be Needed if Effective Work is Done; When and How to do the Advertising.

BY WESLEY FOSTER.

"What we want to do is to make the housewife *think* of honey when she is ordering groceries." In other words, we want to get honey out of the luxury class as much as possible, and into the staple and necessity class along with sugar, potatoes, flour, etc. This will not be fully accomplished; but what has been done in some small sections of the country can be done in the country as a whole, with the different methods of advertising. By advertising I mean any thing that will arouse people's interest in honey. A swarm of bees alighting on a department-store window on a crowded city thoroughfare is advertising, for it will almost stop traffic, and thousands talk bees more or less intelligently for an hour. The presence of several specialist bee-men in a town will cause comment; and when a community is aware that honey in commercial quantities is produced right at their doors, that community is going to be a large consumer of honey. Honey has been produced in quite large quantities in all the irrigated portions of the West, and the towns in these districts are all good markets for honey. Boulder merchants are not afraid to buy honey, both comb and extracted, by the ton; and a hundred pounds of comb honey a week is sold by some of the large ones.

But this condition can be brought about in the large cities through advertising in papers, and demonstrating in stores and house-to-house canvassing with samples, taking orders for the grocer to fill. Perhaps there is more fear of adulteration in the city than in the country; but persistence and an honest straightforward campaign will break down prejudice and fear.

The whole groundwork of an increased honey consumption consists in developing a steady, firm, and constant demand among the consumers; and to do this we must have a continuous supply of honey of even grade and kind put up in the style of package that the trade demands. This supply must be easily reached by the retailers through the wholesalers and jobbers. Now, this steady, year-round demand can be built up only through several kinds of advertising being used simultaneously. The daily papers and magazines, together with the trade papers to reach the wholesale and retail trade, must be used, and these supplemented by all the descriptive articles we can persuade the dailies and monthlies to have their best writers prepare for their columns. The work of the scientific queen-breeder, and the improvements in apicultural appliances, and, in fact, every branch of bee culture, has undergone a development as marked as any industry during the last fifty years.

With all this use of printer's ink must go the house-to-house work, the demonstrations in stores, and the education of the wholesaler and retailer concerning the nature, usefulness in many ways, and care of honey. The dealer must know all about the goods; and when this is reinforced by a knowledge of the value of honey by the housewife we shall have a combination that will make for greater consumption.

As to whether a campaign of this kind could be carried on without an incorporated company to do the work and make the profit would depend on whether an organization like the National Association could raise the money and conduct a campaign similar to the campaign of the Rice Association, the prune-growers, and the canners. Mr. F. J. Root tells me that these people were satisfied with the results they secured. It seems to me that, if we could get the money for the work, some such campaign would be a good thing to take up prior to the organization of a large honey-bottling and distributing association to operate in every city of any size in the United States. There is this difference, though, that the people who advertised rice, prunes, canned goods, etc., were mainly companies who banded together, and each had a well-put-up article, and could fill the demand at once; while with the majority of the bee-keepers improvement in methods of grading and packing, and the building of a selling plan, would have to be done. Wholesalers and jobbers want their credit and regular discounts, delivered price, etc., while the most of the bee-keepers want their money before shipping the goods, and never figure on giving a discount for cash. Special deals also are wanted, such as a free case with every order for ten-case lots. Then the wholesaler wants the goods to be obtainable in uniform grades and packages the year round. One of the things we bee-keepers would run up against would be the failure to supply the kind and grade of honey desired when the jobber or wholesaler wanted it; then some corn syrup would be substituted, and some valuable honey trade would vanish. We shall have to be on deck with the goods the year round.

It may seem like being hard on the bee-keeping fraternity to say that care should be used in selecting the members of the fraternity who are to share in the benefits of this plan by having their honey sold through the advertising done; but if the National Association, we will say, spends money for advertising honey, the Association must be sure that the members furnish a rich, ripe, clean honey of fine quality. From what I know of associations it would be necessary to know the record and character of the man who wishes to participate in the benefits. Some bee-keepers' honey would hurt the cause of increased consumption more than it would help. Of course, much of this honey is injuring the greater consumption of honey right now, but the damage would be more if it were pushed out into wider

markets through the advertising of the National Association.

If the campaign were to be merely general and not specific there would hardly need be any scrutiny of the bee-man's record, for the housewife would ask the grocer for honey (no special brand), and the grocer would ask his jobber, or buy some honey of a local bee-keeper. In this case the Association would take no responsibility, and the non-contributor to the advertising fund would profit the same as the one who had paid into the fund.

It may seem like a big proposition to raise, say, \$50,000 for advertising; but if we realize the possibilities, and work for it, we should find that the money would soon be back in our pockets with interest. There are some bee-keepers who would pay more than a dollar a ton on their crop into a fund. This sum was suggested by Mr. F. J. Root, and would have to be made larger, for there would be many who would not "come over" with the money.

Boulder, Col.

BEET SUGAR FED ON A LARGE SCALE, WITH NO BAD RESULTS.

BY M. A. GILL.

In an editorial on feeding, Oct. 15, you advise cane sugar, and I want to ask why you specify cane sugar when both the law and custom require the same per cent of purity and sweetness in beet sugar as in cane sugar. I supposed that the prejudice against beet sugar had disappeared when the facts had been made known; and isn't it a fact that the two sugars are chemically the same? I saw a case last year where a man who had spent his life as an expert sugar-boiler of both cane and beet sugar was unable to tell one from the other from samples from his own sample-case when the labels were removed.

I have fed both kinds for years for winter stores for bees, both in mild and severe climates, and could never see any difference; but I have used the highest grade when using either kind. I have just finished feeding 14,000 lbs. of sugar syrup to my bees, as we had a total failure here this season on account of drouth and a scourge of grasshoppers. Of course I fed the very highest grade of sugar made into syrup; but most of the bee-men here used an unrefined and cheaper grade; and if we have a long cold winter that keeps the bees confined for a long time I look for them to have trouble with dysentery, while they will be all right with mild weather when the bees can fly often.

A sugar-factory here is making over two thousand tons of sugar per day that I believe is equal to any sugar made on earth for any purpose.

Longmont, Colo.

[We are glad to have this report, showing that refined beet sugar is perfectly safe for bees. This ought to silence forever all re-

ports to the contrary from those who have tested the matter on only a small scale, and who can not be certain, therefore, that their failures were due to the quality of the sugar used.

We did not intend to discriminate against beet sugar in the editorial referred to, for we were using the term "cane sugar" in a broad sense. As you know, the chemical term *cane sugar* includes the sugar made from sugar-cane, sugar-beet, maple sap, etc.; but not honey, glucose, corn syrups, etc., as these latter come under the general class of *grape sugars*. Perhaps our statement was misleading; but we did not intend it to be so. We have before mentioned that we never make any effort to ascertain the source of the granulated sugar that we use, and we never have any trouble.—ED.]

BEE-KEEPING IN WESTERN AUSTRALIA.

BY. C. J. HAESE.

Bee-keeping in the Golden West is quite different from that in America, as we depend solely upon the gum-tree blossoms for honey. Clovers are receiving consideration by the farmers now; but it will be several years before this plant will be of any value to the bee-keeper. In this part of the country the yate gum and red gum are the main sources of nectar, although we get a little from yarrah and white gum, but to an extent hardly worth mentioning.

March is our main month for honey; and if we do not have too much rain during the month a strong colony will average from seven to ten pounds gain per day. We have a honey-yield every year, my average for the last few years being about 200 lbs. of extracted honey per colony. In 1908 my crop would have been doubled had it not been for so much rain when the honey-flow was on. We have rain every month in the year, the total amount for this locality being 30 inches.

This is an ideal locality for apples and pears, but it is too cool for oranges or vines, the temperature seldom going above 90 degrees in the shade in the summer, the nights always being cool. However, we never have snow, and the bees can fly every day in the year except when it is raining.

Italian and hybrid bees do the best here, the ten-frame Langstroth hives being used almost universally. Bee diseases are unknown.

There is not much demand for comb honey. I receive 5 to 6 cts. per lb. for extracted honey, most of which I sell in 14-lb. lever-top tins. The market is limited, for the population of the state is as yet very small, as our country is only in its infancy. However, thousands of people are now coming in from England, a homestead of 160 acres of first-class land being given free to any male applicant over sixteen years of age.

Mount Barker, Western Australia.

COTTON FURNISHED HONEY IN SPITE OF LONG DROUTH.

Although No Rain Fell from June to October, Cotton did Well and Furnished a Fair Crop of Extra-fine Honey.

BY O. SAUNDERS.

The winter of 1908 was mild, and was followed by a rather cool windy spring, which necessarily left our bees much depleted in stores and numbers. June 1 found the colonies in fair condition, and gradually gaining from day to day. The weather was warm and sunny; and horsemint, hoarhound, and various other plants and vines of more or less value, furnished plenty of stores for all brood-rearing purposes, and so we naturally began building castles in the air. The first blooming of alfalfa passed, giving the bees their initial start toward a honey crop. Then cotton began blooming the 20th of June; and when the second cutting of alfalfa was at its best, the way those bees tumbled over each other was enough to stir the blood of a veteran. The only requisite remaining for a bumper crop was an occasional rain; but, alas! the much-needed clouds gave this locality a wide berth, the last rain being on June 10. Then followed the longest drouth ever known in these parts, for not a quarter of an inch of rain fell until the 8th of October, and during this time there were many days when the temperature registered from 110 to 114 degrees in the shade. A great many bees were lost, as well as considerable honey, by combs melting down; but by giving careful attention to the matter, not over a dozen combs gave way in my entire apiary.

At the proper time, the weather being favorable, alfalfa was mowed; and cotton was then our last chance. It did well on our rich bottom land, and yielded a fair crop of the finest honey it has ever been my pleasure to see. It was so thick that it was almost impossible to extract it, and entirely out of the question to strain it through even a single thickness of cheese-cloth. It was light in color, mild in flavor, and very heavy; and in my opinion it was superior to any honey ever shipped to this locality, not excepting even the guajilla (or cat-claw) honey of the Southwest. The long drouth and consequent absence of all other bloom enabled us, I believe, to get a purer cotton honey than we had ever been able to secure before.

Again, in the late fall, when the weather began to get cool, our cotton took what we farmers term a "second growth," soon blooming profusely; and by accident, rather than otherwise, we got also a fair fall crop. During this long drouth, when cotton and every thing else had ceased blooming, we extracted the entire crop; and as we made rather poor work of it, owing to the honey being so thick, the supers containing the extracting-combs were placed back on the hives indiscriminately to be cleaned up,

some of them having three or four supers, others only one or two, while a few colonies got none at all. Now, bees with us are a side line; and as we were very busy gathering other crops we gave our colonies little attention until about the middle of October, when, as we were passing through the yard, we heard the "busy hum" that, to the practiced ear, speaks louder than words. Kneeling down beside a strong colony, a pleasing sight met our eyes. There was the long line of "ventilators" reaching clear across the entire entrance, while a perfect stream of field bees were tumbling down on the alighting-board, loaded with honey and pollen. This lasted with little cessation until into November. The colonies having plenty of empty combs filled something like two supers each, while others, whose combs had been cut out for bulk comb honey, did hardly half as well, as no foundation had been put in the frames.

By Nov. 15 every brood-chamber was filled with brood and honey to its fullest capacity, the bees working and the queen laying as in the spring. Therefore the winter of 1909 had no terrors for the bee-keepers of our section.

Trenton, Texas.

LACK OF HIVE VENTILATION CAUSES FOAMY HONEY.

BY I. T. SHUMARD.

In the July 15th issue, p. 440, a discussion on ventilation is invited. From past experience I am convinced that *good* ventilation not only retards swarming but that it has considerable to do with the quality of honey. I don't remember that any writer has advanced that theory; but if so, I think it of enough importance to mention it again.

Some twenty years ago in Missouri I let our minister have some bees. He built a small tight bee-house with quite a small entrance. When full of honey he called on me to rob them. The unsealed honey was frothy and blubbery, with a sour taste, and the sealed was very dark and inferior. We wondered at the time why it was, when ours, only two miles away, was so nice.

Occasionally I have seen a little foamy honey since then; but this summer I cut a large bee-tree near one of my out-apiaries. The entrance was small, and right at the ground, and up through rotten wood two feet to the cavity; the tree was what is called lighted—that is, dead, hard, rich pine. It was a very solid tree, and about four inches thick to the hollow. I got a small wash-tub full of honey, and not a pound fit to eat, and that within half a mile of where I had taken thousands of pounds of nice honey. Still, I couldn't think why it was. Since then I came across a hive with some of that foamy honey. I noticed the entrance was almost closed; then the idea struck me, it was all for want of ventilation.

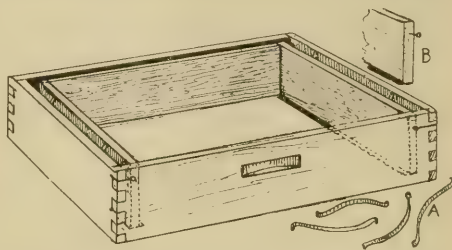
Osprey, Fla., Sept. 15.

HOWELL'S IMPROVED COMB-HONEY SUPER.

BY CHAS. HOWELL.

During the field meeting held at my place on June 29, several of the prominent bee-keepers of the lower part of New Jersey pronounced my super a good thing, and, for my own part, in all my twenty years' experience I have never been able to remove honey from a super as rapidly as I can from this one, although I have tried almost every form of super brought out.

The advantages of this style of super are plainly shown by the illustration. It is a regular deep dovetailed super for 4×5 plain sections, using plain bottom slats 16 inches long, and fence separators, the same length, made to order, also one plain follower. The bottom slats are supported by tins nailed on



the lower edge of each "compression board," which boards are $\frac{3}{8}$ inch thick, and supported by wire nails driven into each end through the saw-cuts in the sides of the super. This sliding supporting nail allows the boards to be forced up against the sections by means of the ordinary flat springs.

Another good feature of this super is the bee-space all around the sections, which the bees use freely, especially when supers are tiered up. The super costs no more than any other.

Hackettstown, N. J.

[An idea similar in principle has been suggested before. We believe the idea is a good one, however, and we do not know why it has not come into general use. It is really a super within a super, the walls of the inner one made capable of being spread apart. —ED.]

AN IDEAL CELLAR THAT DOES NOT GIVE GOOD RESULTS.

[The following letter was rather a puzzler; and, although we believed the quality of the winter stores had something to do with the failure, we decided to submit the question to a number of experts on cellar wintering. We have not received replies from all to whom we wrote; but those which have come in up to date are appended. —ED.]

I am very much disappointed with results of wintering bees in my cellar, which I thought was an ideal repository for that purpose. The cellar is under my residence, built of stone, has a cement floor, and keeps a temperature of near the 45 mark; but with all this my bees are restless. Last winter

they consumed less than 8 lbs. of honey per colony, and yet some had dysentery; all were very, very damp, and some were moldy. I could not account for this condition unless they lacked ventilation, as my cellar is very dry. Where have I failed?

Elroy, Wis., Sept. 27. CHAS. SHELDON.

From the brief description given, I judge the trouble is not with the cellar. If Mr. Sheldon will allow a distance of two or more inches between the bottom-bars and the bottom-board I think he will have no further trouble.

G. M. DOOLITTLE.

We do not like to cement our bees in a "box," as it would seem Mr. Sheldon has his. The bottom and sides of his cellar are likely so well cemented that the moisture from the bees has no place to escape, and, consequently, he has wet moldy hives and combs.

See that the cellar is dark. Give a little ventilation and allow the temperature to reach nearly the 50° mark. A cellar in dry sandy soil, with side walls of stone, *without mortar*, or simply boards for side wall and sand bottom, makes the ideal place for wintering bees. The experience of many successful Michigan bee-keepers has shown that "close to mother earth" (dry sand) is the secret.

E. D. TOWNSEND & SONS.

It is difficult to be very sure as to the trouble in wintering, with no more complete knowledge of how the hives were ventilated. I should say, however, that the hives either were not sufficiently open or that the place was so dry as to make the bees restless, and so cause disease.

J. E. CRANE.

"Very, very damp" hives in a "very dry" cellar confirm the suspicion of lack of ventilation *in the hive*. Have the entrance two inches deep by full width of hive; or leave usual entrance with ventilation at top; or leave hive entirely open, either top or bottom.

C. C. MILLER.

I would attribute this largely to improper food—perhaps honey-dew. Contract each colony to the comb-space it will cover; give not less than ten pounds of sugar-syrup stores (to carry them through the period of confinement); leave a cloth or honey-board, but not a painted cover, above the frames with a cushion for warmth above that. Have the entrance wide open, and leave the bees undisturbed and in the dark. Under these ideal conditions the bees should winter well in the cellar mentioned.

R. F. HOLTERMANN.

TANGLEFOOT HONEY NOT SUITABLE FOR THE BEES.

BY J. D. YANCEY.

Losses of bees have been reported, due to tanglefoot honey. We had this trouble, although not seriously, in South Texas, when there was any quantity of either tanglefoot

or goldenrod honey gathered. It never affected the bees in the fall or winter; but just as soon as spring started they would begin to dwindle, and continue to do so until settled warm weather brought plenty of new honey. I do not think we ever lost an entire colony from this cause; but it may have been due to the fact that our honey never granulated, and the hives generally contained a quantity of good honey.

One can readily detect the presence of new tanglefoot honey in the hive, as it has the same smell as a field of the weed in bloom.

Those who have had this experience would do well to extract this honey and feed back sugar syrup. It can be disposed of to the biscuit companies for almost enough to pay for the sugar; and the assurance that the colonies will be clean and healthy in the spring will surely pay for the trouble.

Bridgeport, Wash.

SELECTION IN BREEDING.

Breeding Horns from Cattle Not the Same as Eliminating the Swarming Instinct in Bees.

BY RALEIGH THOMPSON.

A good many have been writing about breeding tails from cats, horns from cattle, etc.; but these writers have been thinking of one thing and writing about another. Has any one ever heard of a poultryman trying to breed hens that would not lay, or of a stockman trying to breed a non-breeding animal? The bee-keeper wants a queen that will lay eggs by the thousand. Now, while it is true that hens do not swarm to keep up a supply of hens, nor do animals swarm to keep the stock from becoming extinct, colonies of bees must swarm, for that is nature's way of keeping them from dying out.

In poultry there are male and female for increase; but among the bees the male and female are for increasing the number of bees instead of directly increasing the number of colonies.

Suppose a colony were put in a box car, and the queen lived for twenty years. If this colony were put on to six combs it would swarm when the honey-flow came on. Man may breed wings and legs, and even heads from bees, for all I know, but he will never produce a non-swarming race.

Underwood, Ind.

Honey-dew from Oak Leaves this Season.

Please advise me what the oak leaves I send have on them. I wonder if it can be honey dew. As it is very late in the season, it has a sweet taste to it. I have an oak-tree in the front yard, and it seems to be covered with this secretion. Bees are doing well this fall. Honey is retailing at 18 to 20 cents. Kewaunee, Ill., Oct. 3.

L. PETERSON.

[The saccharine deposit is the work of aphides, no doubt. When the bees gather it and store it we call it honey-dew. We have seen very little of it this year, although last year there were immense quantities of it reported from all parts of the country.—ED.]

Heads of Grain

from Different Fields

Sealed Covers, and Eliminating the Clustering-space Above.

After much study of the matter of outdoor wintering I would offer the following for discussion. It would seem that there should be a correct solution of every problem, and this among others.

Considerable difference of opinion exists in regard to the arrangement of the top of the hive for winter, one man advocating making it air-tight, so far as he understands that method, while the next man says put on loose stuff and raise the cover $\frac{1}{2}$ inch, and there are many others.

Let us study the conditions. The bees maintain, under favorable conditions, a given temperature within a space proportioned to their numbers. If their numbers are less, their ability to warm a given space is proportionally less. The logical thing to do is to make the space suitable to their number, but this can not always be done.

We know the bees try to make their winter home air-tight, and there can be no mistake in following nature's teaching; but there can be no half-way business about it, for the following reason: If there are any vacant spaces left in the arrangement on top (whatever that may be), into which the moisture-laden air can penetrate and there condense its moisture, it will be seen at once what the condition will be. Now, if the covering or packing be sufficiently porous, so that a current of air can pass through, however slowly, then the air-current, which will be warmed by the bees, will keep the mass of this porous material above the temperature at which the moisture will condense—that is, excepting the topmost layer—and may be even that if there are enough bees below to furnish heat.

But think a moment what such a current of air means—just that much cold air to be warmed with honey consumed, and, in case of a small colony, a lack of force to accomplish it, with such consequences as you can imagine.

Again, in case of so-called air-tight coverings there has probably been this shortcoming. There may have been, and I am convinced that it is the fact, considerable vacant spaces entirely within the air-tight covering, into which the moisture-laden air of the hive could and did penetrate; and these spaces, being necessarily cut off or separated from any warm circulation, the moisture there condensed makes the whole mass damp and unwholesome.

The conclusion to which I have come is this: Nature will be best followed and served by a compartment so arranged as to be *air-tight, non-absorbent*, and, consequently, as dry as can be, and of a size to suit the tenants. By means of division-boards, solid and close-fitting, we may adjust the size of the winter sleeping-room fairly well. By a simple arrangement consisting of only two thin boards to lay flat and tight down on top of the frames, and fitted snugly to the sides of the hive-body all around, leaving a space only half an inch wide between the edges of the boards across the hive at about the middle, and right-angled to the frames, we enable the bees to make their nest as tight as they will. This space across the frames is for a highway by which the little people can travel from frame to frame in the warmest part of the house. These boards are just thick enough to take up the bee-space above the frames, and come into perfect contact with the super-cover, which is to be tacked down on top with two or four small wire nails. The hive can then be blanketed, as may be preferred, without any possibility of dampness from the inside. The general idea is to confine all the heat, and afford no place for dampness to collect, there being no absorbent material, and no air-spaces not easily warmed naturally. By this plan the usual necessity for top ventilation is done away with. An ample, properly adjusted entrance is the only requirement. Now please start the music.

B. KEEP.

[The objection to your plan is that the cluster of bees, as a general rule, stands directly over the entrance to a Langstroth hive. As the season pro-

gresses, the cluster moves backward. One vital defect in your plan is that, during the fore part of the season, and the latter part of the season toward spring, the bees would be removed from the gap that would permit them to pass from one comb to the other. It is vitally important that the bees have a space all over the top of the hive by which they can move from one comb to the other. If it were not for this your plan of eliminating the space above the frames might be all right.—ED.]

A Suggested Plan for Making Increase; How to take Care of a Weak Colony that is Being Robbed.

Early next spring I wish to increase my apiary artificially. I have read several methods for doing so, which seem to me to be a good deal of trouble. I should like to know what you think of the following method: Go to the hive you wish to divide (the bees being ready to swarm naturally, and so having queens ready to emerge from cells); set it on a stand a few feet away. Now place a new hive, filled with foundation, on the old stand; open the old hive, and remove about half the combs, bees, etc., and put them in the new hive, removing as many frames of foundation as is necessary to make room for those filled with comb and bees. Put the frames of foundation in the old hive and close it. Now close the new hive with the swarm, and it is done. Be sure to have at least one queen-cell in the new swarm so the bees can have a new queen as soon as she is ready to emerge. It does not matter which hive the old queen is in, since either one of the colonies can rear another one.

When numbering bee-hives, would you paint the number on the hive itself or tack on a tag having a number on it?

What can I do for a rather weak colony that lets the robbers come in after I have contracted the entrance so only one bee can pass? It has a good queen and also some brood. The bees are all right in the warm part of the day; but it is in the early morning that they can not keep a robber from going in every now and then.

Raplan, Va., Sept. 30.

G. H. LATHAM.

[Your plan of artificial swarming is all right, with the exception that we would give the laying queen to the swarm. A colony without a good queen, according to our experience, does not do quite as good work as one having a queen.

It is better to use separate tags, each having a number on it, than to paint numbers on the hives. It sometimes happens that you will desire to change the number on the hive itself.

A weak colony that will not defend itself when the entrance is contracted down so that only one bee can pass at a time is not of very much use. We would advise you to give them a frame of hatching brood from some vigorous Italian stock. A few young Italians will put new life in the hive. At the time you wrote, possibly your queens had quit laying, and you have no hatching brood. That being the case, we would advise you to unite your weak stock with some stronger one. If you have no place to put an extra queen you had better kill the one in the nucleus.—ED.]

Boneset as a Honey-plant; an Important Lesson in the Bee Business.

I am sending you a package of weeds known here as the "fluxweed." Will you please inform me what the botanical name is? In this locality it is the finest honey-producing plant we have. The honey is of the finest flavor, and as clear as that from white clover.

The bees did nothing here until the last week in August. In four weeks they put in a good strong store for themselves, and all that were strong put up from 10 to 50 lbs. in the supers. Until the last week in June I fed about half of my colonies to keep them from starving. Then I learned the best lesson of my life in the bee business, and that is, that all colonies must be kept strong and full of bees if they are to lay up any surplus when the honey-flow starts up. But I did not learn it in time for this season; but I'll certainly attend to that next year. About half of my colonies were too weak to benefit me this season; but all but two or three have put in enough for themselves. I am an amateur in the business. I have only forty colonies, but intend to double that number next

spring. I have been a teacher for thirty years, and shall retire after another term and spend the rest of my days as an apiarist.

Kewanee, Mo., Oct. 14.

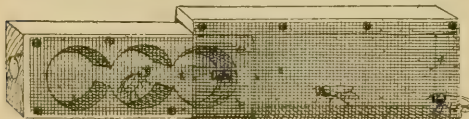
E. T. JOYCE.

[The plant is one of the *Eupatorium* family. I think it is commonly called "boneset," and some seasons it yields a large amount of nice honey.]

The lesson you speak of is certainly an important one. It is what Langstroth called the "sheet anchor" in bee-keeping—strong colonies. In your case you had good reason to be discouraged if you did not get any honey until the last of August; but it often happens in many localities that the fall flow of honey is the most important of all.—A. I. R.]

An Easy Way of Putting Bees in Shipping-cages with Queens.

The editor has described and illustrated his method of putting bees in mailing-cages, but I believe I can beat his plan. I make a wire-cloth cage that will just admit the end of the mailing-cages, leaving the other end to be closed with a plug or the finger. I place this open end over the queen, and as many bees as possible; and if more are needed I



scoop them in. A little smoke at this end will drive the bees up to and into the mailing-cage through the hole in the end. If they do not go up fast enough I dip the end of the cage into a cup of water and slowly lower it into the water, so that the bees are forced up into the mailing-cage.

Oswego, N. Y.

F. H. CYRENIUS.

[We doubt very much whether you could fill a cage much faster by your method than we do by ours, for it is surprising how quickly one accustomed to the work can pick up the bees and get them into the cage. Then by your plan you are not likely to get bees of the right age. By the "hand-picked" method young bees can always be secured. Your idea is quite ingenious.—ED.]

A Simple Set of Grafting-tools for Queen-rearing.

The drawing shows a set of my grafting-tools. While I am only an amateur, I would give five dollars for a set that would work better. On page 496, August 1, Mr. Pritchard tells of the trouble he has in getting queens to hatch from queen-cells in cages. I make my cages round to fit the Pratt cell-



cups, and then slip these over the cells as fast as they are capped. I hang a frame of them between two frames of brood, and I hatch almost every one of them—at least every one that would hatch if uncaged.

Salem, N. J.

HENRY BASSETT.

[A number have suggested a pin-head transferring instrument, but we do not remember to have seen such a tool made from a feather cut down. It would seem as though this would be a good thing.]

Mr. Pritchard also says, page 496, that queens that emerge in cages commence laying two days later than queens that emerge directly on to the combs at any place.—ED.]

That Sour Smell in the Vicinity of Hives.

On p. 670, Oct. 15, I see a correspondent writes in regard to a sour smell which he noticed in the vicinity of his hives. I wish to say I noticed a strong odor, which I can compare with nothing better than buttermilk, about my own hives, but only during the fall honey-flow while the bees were just tumbling over each other bringing in the nectar. This odor may have lasted a week or ten days, and disappeared in a day or so when the rush was over.

I examined some frames, but could not see any thing to attract my attention particularly. May not this odor be from some natural change taking place in the fresh nectar? or might it not be the natural emanation from some particular kind of nectar? At first I was inclined to be anxious on account of it; but as the bees kept right on working, and every thing appeared to be normal in the hives, I concluded it must be a natural thing, probably due to one or both of the above causes, and ceased to worry.

Hoboken, N. J., Oct. 20.

C. D. CHENEY.

A Bee-demonstrator as Interesting as a Snake-charmer.

I am sending you a copy of the program and other literature used at the Maryland State Grange picnic last year. I gave a bee demonstration, the Grangers inviting me, and advertising it as an event on the official program. I thrilled a crowd, estimated to be about 8000, on Wednesday and again on Friday, doing stunts that were considered "simply marvelous." The crowd played a trick on a speaker that I considered more marvelous than my stunts. One of Maryland's most noted orators was just in the middle of a good-roads speech when the crowd caught sight of me unloading a colony of bees. Practically every one of them arose and made a rush for the bee-cage. The orator had to quit, and nothing would satisfy the crowd but bees. The officials told me to go ahead—that the speaker would finish later, and he did.—The newspaper men put my name in "sore heads" as "The Bee Charmer," "Bee Wizard," etc. After the first demonstration the crowd nearly mobbed me.

Taneytown, Md., Aug. 3.

R. A. NUSBAUM.

Honey Resembling Brown Sugar Not from Cantaloup-blossoms

On page 635, Oct. 1, R. V. Paschall asks about the source of his thick candied honey resembling common brown sugar, and suggests cantaloup blossoms. We have considerable of it here, but no cantaloups. One man put a swarm into a new hive, and in three weeks every thing was filled up solid with it. We called it honey-dew, but it is different from the honey-dew secured in other localities. It is too thick to extract, and the flavor is not first-class. If it is not honey-dew, what is it?

Torrington, Ct., Oct. 13.

WALTER H. HULL.

[It might be honey-dew, as you say. Honey-dew varies greatly in flavor and color. Some of it is very fair eating; but most of it is hardly suitable for table use. The fact that the honey of which Mr. Paschall wrote was said to be better than clover does not prove that it was not honey-dew.—ED.]

Queen Caged for Three Months.

I had a funny experience in introducing a queen this summer. I put a fertile queen in a Titoff nursery cage alone in a queenless hive, meaning to let her out in a few days. I forgot all about her when I left at the close of the season, June 15. My partner and I went to the apiary Sept. 16, and were looking through the bees, and found the queen in the cage. She had been there three months. She was alive, and seemed to be all right, good size, and lively. The bees had fed her all of that time. I will watch her and see what she does next year. I let her out of the cage with the bees, and they accepted her.

Pasadena, Cal.

GEORGE LARIMAN.

[This is not an unusual case. We have had queens that have been confined thus much longer. Of course, in such cases the bees having accepted the queen keep her supplied with food.—ED.]

Bee-keeping for Farmers' Wives.

I have 47 colonies this year, and have taken off 728 lbs. of section honey. I wonder why more of the farmers' wives do not keep bees, as they pay better than poultry, and give us more clear profit than cows. I take nearly all the care of mine, as my husband has other farming to do.

Nineveh, N. Y., Sept. 28.

SUSIE F. COLE.

[Some farmers' wives, in some localities at least, could earn more money with bees than with poultry.—ED.]

Our Homes

By A. I. Root

And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.—GENESIS 2:7.

Dear friends, this is going to be a *home paper*. After you get through with it, see if you do not agree with me. A few issues ago I gave you a talk about nightgowns and keeping our bodies clean; and, by the way, I do not know but I have risen earlier since I wrote that article, because as soon as I wake up I look forward with enthusiasm to my open-air exercise without a rag of clothing to encumber me. Our sleeping-rooms are cold; and when I first get out of bed it is cold work. But just as quick as that nightgown drops from my limbs I commence a vigorous rubbing just as fast as I can make my hands go. Every portion of my body is rubbed with the naked hand until the friction warms me up all over. Then I put on my clothing for the day, and feel full of enthusiasm for whatever needs to be done, the minute I get out into the open air; and *pure cold air* is to be my topic just now.

Mrs. Root and I have not yet arranged for an outdoor bedroom; but my two boys and their families all sleep outdoors, even down to the youngest, and all enjoy it. Now, I suppose every one of you can get hold of *McClure's Magazine* for August, without very much trouble. You had better do it, even if it does cost some trouble and expense; and when you get it, turn to the article entitled "Oxygenizing a City; an Attempt to make Two and a Quarter Million People Work and Play under Sanitary Conditions. By Burton J. Hendrick."

This exceedingly interesting article tells first about the trouble they had in keeping their monkeys from getting sick in the Chicago Zoological Garden. They finally called in a pathologist, Dr. W. A. Evans, and he went to studying monkeys in order to see what made them so subject to tuberculosis. In talking with the manager of the Zoo, whom we will call "Cy" for short, although his name is De Vry, Mr. E. gave his idea of the matter as follows:

"Just take my monkeys, for example," said Mr. De Vry. "I find that the average temperature of the places from which they come is eighty-five degrees Fahrenheit. Now, the thing to do, of course, is to keep them always in eighty-five-degree air. In the summer-time they get this easily in the open. When winter comes, I take them all inside, turn on the steam, and keep their quarters at about eighty-five degrees. They like it too. Look here," and he led the way into one of the modern steam-heated monkey-apartments. Here twenty or thirty shivering creatures were making heroic efforts to keep warm. In one corner, a large radiator was sending forth enormous gusts of hot air, and a wooden shelf on top of this radiator was the most popular quarter of the cage. Every inch was filled with huddling monkeys rapturously basking in the heat, which was not far from one hundred and twenty-five degrees.

"Your scheme seems logical enough, Cy," said Dr. Evans. "You are simply trying to do for your

monkeys here what nature does for them in their own homes. But it doesn't seem to work very well. I think we had better try something else."

SICK MONKEYS GET WELL OUT OF DOORS.

The next fall the Chicago Zoo purchased its usual winter consignment of monkeys. Nearly all of them were fresh from the tropics, and consequently were in fine physical condition. As usual, however, there were a few animals that had lived in this country long enough to have become physically degenerate. They were sad and mangy specimens, having practically no hair, and with the skin drawn tightly around their bones—feeble, timid, and feverous. At Dr. Evans' suggestion these were placed aside as safe subjects for experiments.

"Take your twenty healthy monkeys inside, as usual, this winter," he told Cy De Vry, "but keep the five sick ones outside. It will be interesting to see what will happen."

"But they can't stand it; the cold air will kill them," protested the keeper.

"If it does you won't lose much—or the monkeys either, for, at best, they can live only a few weeks."

As the winter came on, these five sick tropical animals were kept in a place where they were constantly exposed to its chilling drafts. They became perforce fresh-air cranks. A thatched shelter was provided, into which they could retreat when the weather was too icy, but no artificial heat was supplied. Strangely enough, except at night, when they slept under it, the invalids seemed to care little for this shelter.

With the gradual approach of winter the monkeys showed as natural an inclination for the cold open air as their healthy brothers did for the hot drafts inside the monkey-house. Presently there appeared upon their emaciated bodies a faint sprouting of hair, which grew thicker as the weather became more severe. Gradually the sluggish creatures started into life; instead of huddling in corners, they began to climb and jump about their cages. Before the winter was over, all of them had thick brown furry coats; their muscles had grown large and strong; they ate eagerly, and manifested an increased desire for the favorite simian pastime—fighting. They became the most popular curiosities of the Zoo. Nothing in years had delighted visitors so much as what had now become an every-day sight—one of these tropical animals, in zero weather, seated upon a snow-bank, contentedly eating a banana.

ALL THE INSIDE MONKEYS DIE.

But the twenty monkeys that, early in the winter, had entered the steam-heated monkey-house in splendid physical condition had not fared so well. By spring not a single one was alive—all had died of tuberculosis. The artificial reproduction of "tropical conditions" had killed them, as it had killed hundreds of their predecessors. The five outdoor animals, however, never showed the slightest trace of the disease.

Now, friends, you can afford to read the extract I have given above, several times. Just think of it. Monkeys are tropical animals. One who did not know would say they would die in a few minutes if placed outdoors on a snowbank*; but they did not die when put to the test, and, more wonderful still, the sick ones put out in the open air all recovered, while those that were kept in apartments warmed by means of radiators (*artificial* heat, mind you) *all* died. Let me give you one more extract:

As a result of this reform there's no more tuberculosis in the park. In five years there has not been a single death from this disease. In every way the animals show an increased vitality. Or—

*No wonder the spectacle of the monkeys on top of the snowbank, eating bananas, with the temperature down toward zero, attracted so much attention at the Zoo. Well, chickens and children also can be happy outdoors while at play under similar conditions if they are started right and cared for in a sensible way. Of course the chickens and children should have a good warm place to get into whenever they feel the necessity of getting warmed up.

dinarily monkeys do not breed in captivity; in the Lincoln Park Zoo, however, monkey babies are by no means rare. One, which was born last August, spent the entire winter outdoors, with a most invigorating effect.

What do you think of that? When they turned the whole outfit out in the open air there was not a single death from disease in *five years*. Now for a moral that comes home to us poultrymen. Just as soon as I took up poultry (so vehemently) four or five years ago I became more and more convinced every day, that the chickens should be outdoors—yes, even *little* chickens; and when I had decided that artificial heat instead of the heat of the mother-hen was a mistake and a blunder, our good friend Philo came to my aid with his discovery. Now, do not misunderstand me. Chickens just hatched must be kept warm; but they must also have plenty of pure outdoor air, just exactly as they get it from under their mother's wings. I have not tried newly hatched chickens in the fireless brooder at a *zero* temperature; but I think Philo demonstrated, even before our college professors did, that it can be done; but of this I am sure: That thousands and thousands of chickens are sent to a cruel death by *mistaken kindness*, just as the monkeys were. Again and again I visit poultrymen (and poultrywomen too) who are hurting their chickens by lamp-heated brooders; yes, I have repeatedly seen them shut in these artificially warmed brooders when the sunshine outdoors gave an abundance of heat without costing a cent. Two years ago I had a lot of chickens that did not seem to do well. They had an abundant opportunity to run outdoors, but they just kept inside and huddled up against the hot-water pipes. After several had died, and I saw they were all going to die, I took away the lamp and hot-water pipe, and just put a warm blanket over their backs. Of course they peeped, and made quite a fuss for a while, but in a day or two they went outdoors and ran about in a way that chickens ought to do, and all at once began to grow like weeds. They were like the monkeys that kept crowding to get over that hot shelf. They had gotten into an unnatural condition, by unnatural surroundings. Now, my good friends, I hope you will remember what I have said about chickens; and I rejoice to know that just now there is a great wave starting toward "fireless brooders," and it is extending all the way from Maine to Florida. It will probably take some time for the manufacturers of the heated brooder to get over their notions (or, perhaps we might say, to get rid of the stock of lamps and fixings they have on hand), but they are coming to it.

Now, I think you will all agree that *monkeys* and *chickens* are of small account compared with the bodies of schoolchildren and grown-up men and women. After Dr. Evans had succeeded in curing the monkeys, and making them stay cured, he turned his attention to humanity in the great city of Chicago. He was a rising young man, and the mayor of Chicago had the good sense to

appoint him health commissioner, and he commenced the study of conditions then existing in that great city. The author of the articles gives us some of the *advantages* Chicago now enjoys:

Few realize—the people of Chicago least of all—the services rendered by an expansive body of water like Lake Michigan in purifying the air supply. It provides the air with indispensable moisture; and it acts as a huge filtering-plant, picking up dust particles and bacteria, and leaving for human consumption the unadulterated oxygen. Then from the prairies comes the wind, that indispensable adjunct to thorough ventilation; for good breathable air, as all authorities insist, is, first and always, moving, circulating air.

Of course, they have the black smoke from 10,000 factories and 26 great railroad systems; but there is a *chance* for pure air, after all. And, by the way, Chicago has been doing some wonderful things in working for the health of its inhabitants. See the following:

Everywhere modern science has made wonderful progress in combating the diseases caused by bad water and bad food. Take the city of Chicago, for example. It built its famous drainage canal, and, at a stroke, cut down its typhoid rate about eighty per cent.

In Dr. Evans' researches through the city he went into the schoolrooms. Here is one of the headlines I found in this article about our cities:

HOW CHILDREN ARE "KILN-DRIED" IN THE PUBLIC SCHOOLS.

I never thought of it before, but Dr. Evans tells us that one of the great causes of catarrh and other diseases of the breathing apparatus is that dry air has so great an affinity for moisture. Do you remember the way the women-folks tell us, that some days their clothes on the line will dry very quickly, and again they will hang there all day long and not dry out at all? Well, dry air, especially this *artificially* dried air, is constantly *seeking* moisture. If it can not find it anywhere else it will take it from the mouth and nostrils of breathing children; and this drying process causes these sensitive organs to crack and become sore, and thus invite microbes, bacteria, etc. Some of us have been laughing at T. B. Terry because he carries four or five painfulls of water every day to fill up his "humidifiers" as he calls them. Terry keeps every cubic foot of air moistened up every wintry day, in every room in his house that is warmed by artificial heat. When I stood by his wondrous display of rank and thrifty house-plants that stood in his front window he said something as follows:

"Mr. Root, the outcome of my humidifiers that evaporate several painfulls of water a day is these beautiful plants grown in a natural and healthful atmosphere."

Then, pointing to his wife, who stood near, he said, "Here are the beautiful healthy plants;" and, with a comical look on his face, he added, "and there is a beautiful healthy woman, the result, like the plants and flowers, of an atmosphere that is constantly *humid* as well as warm." And he told the truth. Mrs. Terry, even if she is

toward the 70's, is a bright, healthy, comely-looking woman.

I do not know whether Dr. Evans has been reading Terry's writings or not; but here is what he said about giving the children in the Chicago schools a *humid* instead of a kiln-dried atmosphere for breathing.

As a result of this agitation the Chicago educational system has originated a new verb—"to humidify." The meaning is simple: All hot air, before entering the schoolroom, is passed through jets of water or of steam. It now picks up its moisture in "humidifying" chambers in the basement, instead of in the throats and nasal passages of the children and teachers.

My good friend, I do not know just where you are going to live and breathe during the coming winter, but let me impress on you the needed importance of insisting on a humid atmosphere as well as warmth. Terry tells us that if the air is sufficiently damp we can be comfortable five or ten degrees lower; so there is an absolute saving in fuel by watching the atmosphere of your *home*, as well as the horses, pigs, and chickens, every day of your life. Now, they have some children in Chicago who are threatened with tuberculosis; and, may God be praised, they are succeeding in making them *well*. There is a picture given of the outdoor school on the roof of the house during the winter time, and you can well afford to invest a dollar in a copy of this magazine, if you can not get it otherwise, just to look at the picture of the consumptive children in their open-air schools. Here is what is said about it:

On the roof of one of the Hull House buildings the United Charities of Chicago have established an open-air school for tuberculous children. Here, on the most freezing winter days, are fifteen invalids from the stockyards district, clad in close-fitting Eskimo suits—the girls, like the boys, in trousers—with mooseasins and blankets, bravely fighting for health and life. They are gaining in weight and color, and, like the children in Mr. Watt's open-air school, are making abnormal progress in their lessons.

So much for the schools. Dr. Evans was given authority to inspect one of the underground bake-shops of Chicago.

An inspection showed that there were about fifteen hundred bake-shops in Chicago, nearly all of them below the pavement-line. They were dirty, begrimed catacombs, heated with blazing red furnaces, thickly populated with white-garmented, pasty-faced, slow-moving figures. These pallid inhabitants were usually panting for fresh air; in many cases no provision had been made for it at all.

What do you think of the above? By the way, the enterprising managers of shredded-wheat biscuit saw the above and copied it for an advertisement in the *Sunday School Times*. They suggested that, instead of buying bread made under such conditions, the people should buy their biscuit made in their great sunlit bake-shop that cost a million of dollars, at Niagara Falls. Well, the bakers broke out in a tremendous wail when Dr. Evans said they must get out of their filthy underground apartments, and then the city authorities had a muddle on their hands. But all at once the mighty forces of nature interposed in the shape of a big rainstorm or cloudburst, and the water ran into those dirty basements in such a flood

that the inmates had to get out in a hurry; and now Chicago's bread is baked above ground. At one of their trade conventions one of the number got up and said, "We are (in consequence) better men, better citizens, and better bakers."

Dr. Evans went everywhere. He went into the people's homes. He went into the nickel theaters, and raised a rumpus. He put up posters in the street-cars. One of them reads, "Which way are you going—to health and long life or to consumption and early death?" Reader, how does the above hit you? It almost makes one laugh to think how near Dr. Evans has come to the title of Terry's new book, "How to Get Well and Live Long." Another card reads, "Closed windows mean dirty air, and dirty air poisons the lungs and means death."

The last sentence in this exceedingly valuable article is as follows:

Manifestly, a material reduction in the death rate from tuberculosis will take time; but the figures show that Dr. Evans is already making headway. Before he started his campaign, there were annually 187 deaths per 100,000 from this disease, whereas last year this had been reduced to 174. If, as the sanitarians dream, the ideal city of the future is the one in which contagious disease will not exist, the prime characteristic of that future city, as Dr. Evans has demonstrated in Chicago, will be freely moving, clean, fresh air.

Dear reader, even if there is a good deal of filth about us, even if we were formed of "the dust of the ground," as in our text, is it not also true that the great Father above "breathed into" all of us "the breath of life"? and not only that, our text tells us that "man became a living soul." God has given most of us, at least, a good breathing apparatus to start with. If he didn't, our parents have been more or less to blame because they did not do *their* duty. But we may rejoice that he has given us good common sense; and we can certainly shake off sickness and disease (and perhaps even *death* for a long while), if we get up and bestir ourselves; and I am sure we can, each and all of us, unite in praising his holy name for the light that is being shed on us in recent days, in regard to this very matter of keeping *healthy* and *happy* and *well*.

THE LAND OF THE "SUNDOWN SEA," ETC.

Our Homes interests me more than all the rest. Money is not every thing with me, and I rejoice to see that there are patriotic men and women in the country who have the welfare of the nation at heart, and are not afraid to speak the truth. Most of our preachers seem to be afraid. Of course, they are depending on a salary for a living, and they know pretty near how far they can go without offending their congregation.

We must try to get good moral men in office—men who are too dignified to weaken their mental and physical ability by the use of opium, morphine, intoxicants, tobacco, or any other degenerating agency; then a moral and physical education should be compulsory in all schools, and there should be at least a small flower-garden to every school. They should be taught to love a flower, to love something, yes, to love the Creator—to love and respect all good people. They should also learn that, to be "happy," it is necessary to be healthy. They should learn to eat natural food, and abstain from all artificial food such as sugar, flour, vinegar, wine, etc.

By the way, I see Mr. Graves finds a little fault

about your enthusiasm over Florida. The fact is, a man with a good healthy conscience and enough to eat can see and enjoy the beauty of nature anywhere. He acknowledges that they have 98 per cent climate. Well, that is certainly not bad. Anybody ought to live on that; but *here* we have 150 per cent, and we can nearly live on it too — no mosquitoes nor redbugs; no blizzards nor cyclones, and we can sing the old song:

Have you heard of the sundown sea, love,
With its blue and golden sky,
Where the ripples play the livelong day,
Where the summers never die?
Here is health and wealth for you, love;
Here is health and wealth for me;
Here is all that is best in the golden West,
In the land of the sundown sea.

Aguaanga, Cal., Oct. 11.

PAUL THOMSEN.

My good friend, I fear you are a little rough on our preachers. Are you going to meeting every Sunday so that you *know* just what kind of preachers we do have? And let me suggest, too, that ministers *should* be a little careful about "speaking out," as you term it. Do you remember what the Savior said about disturbing and endangering the wheat by pulling out the tares? I am glad you like your California climate. But you do have blizzards once in a while, even in California—at least you did when I was there. And you do have it terribly dry and dusty in the summer time, which is not the case down in "sunny Florida."

A LARGE CITY OF OHIO THAT NOT ONLY VOTED DRY BUT KEEPS DRY.

On page 508, May 15, 1904, and page 558, June 1, 1904, I described a visit at the home of the great flower establishment of Good & Reese, of Springfield, O. At that time their plant covered something like five acres, but I do not know what it covers now. I do know that this firm is quoted by Dun and Bradstreet away up in the thousands.

Well, in a recent letter from one of the proprietors, at the close of it I had one of my happy surprises by finding the following as a sort of postscript:

It may be of interest to you (this being the largest dry city in the State) to know how the Rose law operates with us. When we first voted dry, about half of the saloons gave up entirely; the other half have claimed to sell soft drinks; but at the present time, when they are caught they are known as hard-drink propositions. On the prominent squares of the city, where there were some 40 odd saloons, there are now six that are not used for other business purposes, and these six, at this writing, are closed up tight.

The law has been a great benefit to poor people who spent their money for drink in the saloons, the family now reaping the benefit in better food and better clothing. On the whole, we are pleased to say the law has worked wonders in Clarke County. Springfield, Ohio, Sept. 27. J. M. Good.

I was particularly pleased to know that one of the greatest establishments of this kind in the State, and perhaps one of the greatest in the United States, was on the dry side; and I felt pleased, too, to know that the writer recognized that I was as much interested in righteousness and temperance as in greenhouses and beautiful flowers. Surely our nation is "marching on."

THE INSECT PESTS OF FLORIDA AND OTHER SOUTHERN CLIMES; ALSO SOMETHING ABOUT THE "EMERGENCY FOOD."

In my hand is a book entitled "The Book of Camping and Woodcraft." One of our good friends who reads GLEANINGS calls attention to the fact that the above-mentioned book would give me "the truth" about "redbugs," jiggers, etc., not only from practical experience in the woods, but from a scientific point of view. On the outside wrapper of the book is a sort of introductory as follows:

Sound "horse-sense" about the ways of the woods, written by a man of long experience, by a man who loves the wild, by a man who gives scholarly attention to the smallest details, and, best of all, by a man who can write. In its way, a masterpiece. A book every outdoor man or woman must have, and a book every indoor man or woman should read.

Well, after looking the book over quite a little I heartily second the above. Although I am not much of a hunter, and I am *not* in favor of taking animal life unless it is really necessary, I have read the book with the keenest interest. Even if you have no fancy for the "wild wood" you will greatly enjoy it, no matter what page your eye strikes; and after you once begin reading it you will certainly read it all through. I feel greatly tempted to make longer quotations, but our space is more than filled already.

JIGGERS, REDBUGS, ETC.

The *moquim* . . . a microscopic scarlet *acar*us, resembling a minute crab under the glass. It swarms on weeds and bushes, and on the skin causes an intolerable itching. An hour's walk through the grassy streets of Teffé was sufficient to cover my entire body with myriads of *moquims*, which it took a week, and repeated bathing with rum, to exterminate.

Carapatos, or ticks (*exodes*), which mount to the tips of blades of grass, attach themselves to the clothes of passersby, and bury their jaws and heads so deeply in the flesh that it is difficult to remove them without leaving the proboscis behind to fret and fester. In sucking one's blood they cause no pain; but serious sores, even ulcers, often result.—ORTON, *The Andes and the Amazons*, pp. 484—487.

The author of the book comments on the above as follows:

The *moquim* mentioned above answers the description of our own chigger, jigger, red-bug, as she is variously called, which is an entirely different beast from the real chigger or chigoe of the tropics. I do not know what may be the northern limit of these most un ladylike creatures, but have made their acquaintance on Swatara Creek in Pennsylvania. They are quite at home on the prairies of southern Illinois, exist in myriads on the Ozarks, and throughout the lowlands of the South, and are perhaps worst of all in some parts of Texas. The chigger, as I shall call her, is invisible on one's skin, unless you know just what to look for. Get her on a piece of black cloth, and you can distinguish what looks like a fine grain of red pepper. Put her under a microscope, and she resembles, as Orton says, a minute crab. She lives in the grass, and on the under side of leaves, dropping off on the first man or beast that comes her way. Then she prospects for a good place, where the skin is thin and tender, and straightway proceeds to burrow, not contenting herself, like a tick, with merely thrusting her head in and getting a good grip, but going in body and soul, to return no more. The victim is not aware of what is in store for him until he goes to bed that night. Then begins a violent itching, which continues for a week or two. I have had two hundred of these tormenting things in my skin at one time.

If one takes a bath in salt water every night before retiring, he can keep fairly rid of these unwelcome guests; but once they have burrowed underneath the skin, neither salt nor oil nor turpentine

nor carbolized ointment, nor any thing else that I have tried will kill them, save mercurial ointment or the tincture of stavesacre seed, both of which are dangerous if incautiously used. After much experiment, I found that chloroform, dropped or rubbed on each on separate well, will stop the itching for about six hours. It is quite harmless, and pleasant enough to apply. The country people sometimes rub themselves with salty bacon-rind before going outdoors, and claim that this is a preventive; also that kerosene will do as well.

If one keeps an old suit of clothes expressly for chigger-time, puts the suit in a closet, and fumigates it thoroughly with the smoke of burning tobacco stems, no chigger will touch him. Alas that the preventives should all be so disagreeable!

Concluding this rather painful essay, I will say that the most satisfactory all-around "dope" that I have found, to discourage attack by mosquitoes, flies, midges, fleas, and ticks, is oil of citronella, which, for the two last-mentioned pests, as well as for bed-bugs, must be rubbed all over one's body before going into the woods, or before retiring. I have used it thus, daily, for months, with no ill effect. It is not unpleasant to use, and can be procured at any city drugstore, or at a barber shop.

In giving the names of these pests, or, in fact, any thing else, I think it is well to have the names describe the insects as much as possible. The words chiggers, jiggers, etc., in different localities refer to quite different insects. In the poultry catalogs the insect that attaches itself to the combs of fowls and on the heads and under the chin of little chicks is called "stick-tight flea;" and this name, if adopted, would describe the insect to everybody so that no mistake could be made, and I would "stick tight" to it. These stick-tight fleas may be very troublesome on human beings; but they are quite a different thing from the redbugs. It is the latter that produce the itching and tormenting sores that last for a week or two. I think "redbugs" is the best name for them. But we should remember they are almost microscopic. I have never tried the oil of citronella, but I will when I get back to Florida.

EMERGENCY FOODS.

Now, here is something else in the book that is exceedingly valuable; in fact, the title of the chapter took a mighty hold on me. It discusses what kind of food will give most strength and endurance, that has little weight, and which can be packed into a small compass. After discussing almost every thing that has been tried by hunters, trappers, and others who go off in the desert or through the uninhabited wilderness, the author of the book comes out with a strong indorsement of T. B. Terry and of your humble servant, who is getting youth, vitality, and enthusiasm by living mostly on an "emergency diet." Read what I quote from page 221:

Good wheat is as good as corn, and perhaps better, while the mixture is very good. Common rolled oats browned in a pan in the oven and run through a spice-mill is as good and easy to make it out of as any thing. A coffee mill may do if it will set fine enough. Ten per cent of popped corn ground in with it will improve the flavor so much that your children will get away with it all if you do not hide it. Wheat and corn are hard to grind, but the small Enterpriser spice-mill will do it. You may also mix some ground chocolate with it for flavor, which, with popped corn, makes it very fine. . . . Indigestible? Your granny's nightcap! . . . You must remember that it is "werry fillin' for the price," and go slow with it until you have found your coefficient. . . .

Now for the application. The Mexican rover of the desert will tie a small sack of *pinole* behind his saddle and start for a trip of several days. It is the lightest of food, and in the most portable shape, sandproof, bug and fly proof, and every thing. Wherever he finds water he stirs a few ounces in a cup (I never weighed it, but four seem about enough at a time for an ordinary man), drinks it in five seconds, and is fed for five or six hours. If he has jerky, he chews that as he jogs along; but if he has not he will go through the longest trip and come out strong and well on *pinole* alone.—*Shooting and Fishing*, Vol. xx., p. 248.

There, friends, do you not see how we come around once more to the "dry mash" for chickens? The very thing that makes the chickens strong and well is exactly what makes men and women strong and well. There is a lot of foolishness in the papers and among the people because it is said that provisions are so high that working people can not "earn enough to live." Now, there are wrongs to be corrected, I am well aware; but while these wrongs are being righted it is sheer folly to say we can not get enough to eat. I feel like using the phrase in the above extract—"Your granny's nightcap!" You can certainly scrape up money enough, any of you, to buy some corn and some wheat. Parch it in the oven as directed above, then grind it in a coffee-mill, and you have got the very best *emergency food* in the world.* It will make you happy and make you well; and you do not have to pay any profit to the middleman or grocer. Go and buy your corn and wheat of the farmer. If you want a variety, get some rolled oats of Montgomery Ward & Co., at a little more than 2 cts. per lb. By the way, Mrs. Root and I expect to go back to our Florida home about the first of November, and we are going to carry a bag of wheat down there that was raised here on our own farm. We go to the expense of shipping it so far mainly

*The above reminds me that my youngest sister (whose death I mentioned recently), in our childhood days used to be very fond of parched corn ground in a coffee-mill. When she wanted to please her favorite brother (my poor self) she would select some nice corn from the crib, then parch it just to a turn, grind it in a coffee-mill, then stir it in some nice new milk; and when I came home hungry it seemed to "hit the spot" better than any thing else in the world for a growing boy; and I believe I would now rather have some parched corn ground in a mill, with a cup of milk, than any other *menu* to be had in our highest-priced restaurants. If you will turn over to the book of Ruth you will find that, when Boaz was courting Ruth, while she sat at dinner among the reapers he said to her, "At mealtime come thou hither and eat of the bread, and dip thy morsel in the vinegar." And we read further, "He reached her parched corn, and she did eat, and was sufficed." Now, even if this is getting to be a lengthy footnote I want to suggest for the children something more. My sister Mattie, when she had plenty of time, would sometimes cut out just the germs of the corn with a knife, and this chit, or germ, when eaten by itself has the flavor of fine nuts, and is a most delicious dessert. And, by the way, the red squirrels that flock around our corn-crib have caught on to the same trick, for they annoy us by taking the germ of the corn in the same way and letting the remainder drop on the ground. Well, I have tried seeding these "germless" grains to the chickens; but even they will not accept this mutilated corn so long as they have access to the other kind. Here is a chance for somebody to get out a new kind of food or confection. Perhaps sprouting the corn a little would increase the amount of sugar; and the Chinese have for years furnished on the market a choice delicacy in the way of sprouted peas.

because it is a better quality of wheat than we get at the feed stores down there, and it is perfectly free from dirt and trash. The book tells us that Daniel Boone in his celebrated exploring trip lived mostly on his ground parched corn. The Spaniards in the South have a similar article that they call pinole (pe-no-lay). In the last paragraph in the above, allusion is made to "charqui." This is what the Indians call jerked venison. It is something like our dried beef. Now, Mrs. Root is so fond of a nice article of dried beef that we have our grocer here in Medina send it to us in Florida by mail. It does not keep in that hot and humid climate. Of course, they have it in glass tumblers, but it is not as good, and costs more than to have it sent by mail. Yes, we do have to pay 16 cts. per lb. because of the absurd absence of parcels post here in our own country. If we had such mail privileges as all the rest of the world enjoys, or such as the people of foreign countries enjoy in sending any thing to the United States, we could get a lot of concentrated foods by mail. May God help us. Well, now this one chapter on emergency foods in that book is worth more than the price of the book; and it comes to us from a source so little expected that the whole book is one of my happy surprises, written by a man who tramped for days, carried his gun, provisions, and a blanket to sleep on. I suspect there are many college professors—yes, and city editors (as well as some out in the country), who could "sit at the feet" of our author and learn wisdom.

There is one chapter on camp cookery that makes me hungry every time I read it. May God be praised that we have practical men who give us a book containing so much wisdom, and at the same time give it to us in such a genial and comical way that everybody will read it. I am sure you will excuse me when I add that we have made arrangements to furnish the book from this office, and for saying it right here in these reading-columns.

Just one little illustration of the comical things in this book. When out in the woods, and short of stores, you have got to learn to eat, sometimes, every thing that comes along. He, therefore, opens the chapter on the emergency foods with the following couplet:

But rats and mice, and such small deer,
Have been Tom's food for seven long year.

FLORIDA LAND SPECULATORS; SHIPPING HONEY TO IRRESPONSIBLE PARTIES, ETC.

The following from a recent number of the *Rural New-Yorker* hits the readers of GLEANINGS in several ways; in fact, it indorses what I have been telling you again and again:

Some time ago I bought ten acres of land in Florida of the Tampa Bay Land Co., Tampa, Fla., on installments. After paying five installments I did what I should have done in the first place. I sent a good reliable man to see the land. I inclose the answer. I do not suppose I can get any thing out of it, but would like to have others warned against buying waste

land from these companies that have good land, but sell the poor to fools who do not see it. I told them I would send the case to you; but their answer was that you would be afraid to do any thing—at least that is the way I read it. C. J. H.

The substance of the report on the above purchase from a reliable man at Tampa is as follows:

This land is level, and is what is commonly known in Florida as flat-woods land. There are some pine-trees growing on this land, and scrub palmettos. The land is dry, and is worth about \$15.00 or \$20.00 per acre. You can buy land in any quantity, from 1000 to 10,000 acres, as good as this land, and as conveniently located to Tampa, for \$20.00 or \$25.00 per acre. In my opinion you can buy forty acres of land almost as cheap as you can buy this ten acres, that would be just as good for all practical purposes as this property. I have no desire to injure the parties selling this property. They have some good land for trucking and gardening in their colonies; but in my opinion this dry flat-woods land, such as this, is not worth the price you are paying for it. If you intend to come to Florida, my advice is for you not to buy any thing till you reach here. If you do not intend to come down, but are buying for speculation, I advise you to invest your money in property different from this. This is my candid and honest opinion, and I do not wish you to quote me in this matter.

This again confirms what we have so often advised. Do not buy any lands from the real-estate promoter for speculation or investment. If you want to buy land to occupy, either visit the section yourself or have some trusted disinterested person investigate it for you. You will find in every case that you can buy land, not controlled by the promoters, in the same neighborhood, and as well or better suited to your purposes, for a half or quarter of the price you pay the promoters.

It is not always safe to speculate on what *The Rural New-Yorker* dare do. Our business is to get information for our people, and then to give them the benefit of it without regard to the consequence.

On September 10, 1908, I shipped a bill of honey to Hodgson & Johnson, Washington, Pa., amounting to \$65.00, and have been unable to get even a reply to my letter since then. I am told that they are now located at McKeesport, Pa. If you will try to get the bill I will repay you. H. W. B.

We located these parties at McKeesport, but were unable to get so much as a word from them. We then placed the account with our attorneys; but they were unable to get a settlement without suit. We finally engaged an attorney to bring suit, and the account was collected in that way; but it cost the shipper 50 per cent of the claim. Some of our publishing friends say it is not dignified for a paper to tell such things. Perhaps not; but we should like to have some of them give us a name for the concern that beats a producer out of half his product. We confess that it is hard to confine ourselves to printable language in the telling of such simple robberies. This is the class of people who want to be let alone!

KEY WEST CONNECTED WITH THE MAIN-LAND BY RAIL.

On Sept. 17, 1910, the first train of cars entered Key West on the Oversea Railway, the termination of the Florida East Coast Railway. In the winter of 1902, when returning from Cuba I was watching the islands as our steamer passed one after another. I soon got into conversation with a passenger, and he informed me that he was making a trip to report on the feasibility of building a railway along those islands to Key West; and I am afraid that I was speculating in my mind whether he was an educated engineer, or a man not quite sane. Since then I have watched the progress of that wonderful undertaking with unusual interest; and now that the road is really completed, and running as far as Key West, I for one feel like rejoicing that our nation has been able to furnish a man with the grit and perseverance to bridge the mighty sea thus far. It is probably the longest stretch of dead-level road ever constructed by man.

Gleanings in Bee Culture

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Editorial

THE winter has been coming on much earlier in this locality than usual. The expected Indian summer did not materialize, or at least has not yet (Nov. 21).

DOUBLE-WALLED PACKED HIVES VS. SINGLE-WALLED HIVES IN PAPER WINTER CASES.

WHILE we have had fairly good results in wintering in paper winter cases it has been our opinion that colonies so protected have not fared quite so well as those in the double-walled packed hives. Possibly if more newspapers were folded around the hives and then the coarse heavy paper placed over the whole, and securely tacked on, or tied, the results might be the same. In localities where the absorbing plan seems to give better results the paper winter cases can not be used to very good advantage.

COLLIER'S WEEKLY AND THE SO-CALLED MANUFACTURED COMB HONEY.

IN *Collier's Weekly* for Nov. 5, page 22 of that excellent illustrated magazine, appears an article on the subject of Faking of Food. Along with a list of other foods said to be commonly adulterated or faked we note the following little paragraph:

"Synthetically flavored" glucose makes a fair imitation of maple syrup, but is not anywhere nearly the masterpiece that is turned out in honeyless honey in a beeless comb, so perfect that one involuntarily exclaims, "How doth the busy little manufacturer—!"

We suppose that most of what the writer, Louise Eberle, says, is possibly true; but she is certainly wrong in what she says about the "masterpiece" "of honeyless honey in a beeless comb."

That one little item, coming as it does from one of the most reliable weeklies in the world, will do a great deal of damage to thousands of honest bee-keepers scattered over all the country. Her statement shows the unmistakable ear marks of the old exploded canard of twenty years ago, to the effect that much of the comb honey on the market was artificial, the combs being made of paraffine and filled with glucose. This hoax was repeated so often, in spite of the protests of bee-keepers, that it even found its way into the encyclopedias and some of our standard text-books. Nearly all of

them have since corrected the misstatement. But an encyclopedia, if that is where she got her information, is by no means an authority. If she had asked some up-to-date bee-keeper she would not have made the blunder.

As is well-known, we have had a standing offer for over twenty years of \$1000 to any one who would show that manufactured comb honey could be made so perfect that it would deceive the average consumer. During all this time not one has seen fit to take up the challenge and claim the offer. The National Bee-keepers' Association, backed by several thousand dollars in its treasury, of which Mr. N. E. France, of Platteville, Wis., is General Manager, made a similar offer for a like amount some years ago; and if any more proof is needed we will increase our offer to \$10,000; in fact, we should be safe in making it \$100,000. If *Collier's Weekly* or Louise Eberle will take the pains to look up our financial standing they will discover whether we are able to make good our offer in case her charges are sustained.

Collier's Weekly is one of the leading magazines of the United States. The editor of GLEANINGS has been taking it for years, and expects to continue to do so because of its bold and fearless stand on great moral questions. Of course we shall write a protest to *Collier's*, but it will have a great deal more weight if something like 30,000 of our readers will do the same thing in a brief but courteous note; and we therefore request you, one and all, to fire in postal cards and letters, showing that such statement is not true. Unless this item is corrected it will do a great deal of damage to the bee industry at large. Be sure to make your letters brief and to the point, but, above all, courteous. Sit down and do it now. Address *Collier's Weekly*, New York City.

NO-DRIP CLEATS VS. CORRUGATED-PAPER BOTTOMS FOR SHIPPING-CASES; DO WE NEED A "FOOL-KILLER"?

DURING the last six months we have had exceptional opportunities for seeing many thousands of pounds of comb honey in various kinds of shipping-cases. We find that the honey coming in cases having corrugated paper goes through in very much better condition than that with no-drip cleats. The trouble with the cleats is, that they are often misplaced, allowing one end of the section to be up and the other down. In

this position the comb is very easily damaged, and, as a general thing, when the drip cleats are misplaced the honey will be broken down and leaking, spoiling the whole case. But the most serious objection to the drip cleats is that they are unyielding. The corrugated paper, on the other hand, allows the honey drip to pass away, and at the same time makes an excellent cushion for the sections.

Any honey-producer who has any honey to ship, and has nothing but cases with drip cleats, can well afford to rip the cleats out entirely and buy corrugated paper to put in the bottom of these cases. He will make money by doing it, and save wrangles with the consignees and the railroad companies.

While, last year, a single thickness of corrugated paper was used in the bottom of the cases, it sometimes happens that a case is placed upside down, or that some one with his big feet will step in the middle of the case, crushing or breaking the sections beneath the heel or ball of the foot. While it would be too expensive to make the shipping-cases strong enough for the average ignoramus to walk all over, it is advisable to make every case as near fool-proof as possible. Either we ought to use a sheet of corrugated paper on top of the sections as well as under them, or engage the services of some fool-killer to follow up every shipment of comb honey.

THE SAME OLD STORY; DO WE WANT TO COURT ADVANCED FREIGHT RATES ON HONEY?

We have lately had a few shipments of comb honey come in all broken "ker-smash," and all because the honey was put up improperly by the producer himself. It is the same old story, and we are compelled to repeat the warning again and again. It really seems a pity to ship out otherwise good honey and then have it ruined on arrival at destination because the producer tried to cobble up some home-made shipping-cases that he thought would enable him to save money. Such a policy is penny wise and pound foolish if ever one was.

What are we going to do with this smashed comb honey? Where it is not too badly broken we should advise putting it up in tumblers and selling it as chunk or bulk honey. Of course, one can not realize on it much better than extracted. But who pays for the difference between extracted and comb honey? The producer, as a general thing. In some cases he can make the railroad company pay the difference; but in most cases, especially in small shipments, the producer finds he has to pocket the loss himself, as the cost of a lawsuit would be more than he can actually gain if he won the suit.

If comb-honey producers are not more careful, either freight rates on comb honey will take a sharp advance or the railroad companies will refuse to take comb honey altogether. This is getting to be a really serious matter.

A JUST TRIBUTE TO ONE OF THE LEADING APICULTURAL LIGHTS OF SOUTH-WEST TEXAS.

WE regret to record the death of Mr. D. M. Edwards, of Uvalde, Texas, that took place Sept. 14th last, at his home. For many years he was the leader in Southwest Texas in every thing pertaining to bee culture.

Our older readers will remember how the editor of this journal, in 1901, made him a visit; and so delighted were we with the whole bee-keeping proposition in Uvalde that we called it a "Bee-keeper's Paradise," for certainly it was at that time. Well do we remember that stock-raising and bee-keeping seemed to be the two principal lines of business. When we stopped over at the hotel the chief topic of conversation seemed to be bees and bee-keeping. We never were in a locality before or since where apiculture seemed to be so large a part of a community's life and thought. Conditions since that time have changed considerably, for fruit-growing and stock-raising have jumped apace with enormous strides. It is probable, to-day, that these other industries are more important now than bee-keeping.

We shall long remember the many courtesies extended by our friend when we visited him. He was a man who stood well in his community; and as a bee-keeper he had few equals. He made money with his bees, and was generally regarded as an all-around prosperous man. What was more, he was willing to give every assistance to possible and even probable rival bee-keepers who came to him to learn the business, some of whom subsequently, as we happen to know, squatted their apiaries within bee-range of his yards. He was broad-minded to a fault; and when those other fellows crowded on to his territory he remarked with a smile, "This is a free country, and I have no right to say that the other fellow shall not occupy my bee-range if he desires to." Yes, Mr. Edwards would spend half a day instructing some beginner how to handle bees. He would tell him what supplies he ought to have, then finally send him on his way rejoicing.

In a clipping taken from a local paper it is said of him, "As a citizen he took an active interest in the welfare of the city; and he was an honest, conscientious, and upright gentleman; as a neighbor he was always courteous and friendly. . . . His word was his bond, and honesty was his watchword." We have had many years pleasant dealings with Mr. Edwards, and we can certify to the truthfulness of the statements of his fellow-townsmen.

CARRYING BEES INTO THE CELLAR; STEALING A MARCH ON MR. HOLTERMANN.

IN this issue we call special attention to Mr. Holtermann's plan for carrying bees into the cellar—a plan which we believe to be the best and simplest for doing it—

easier on the operator, and not likely to disturb the bees.

By the way, we have a good joke on our correspondent. A short time ago we wrote him, asking for a photograph, saying we should like to show his picture in GLEANINGS. He wrote back, saying that he was a modest man, and would prefer not to have his picture in the journal. But he had forgotten the fact that we had already secured a number of good pictures of him, in one of which he is seen to be hugging one of his twelve-frame hives. He *might* be caught in a worse position.

Joking aside, a man always looks more natural when he is engaged in some useful work, or assumes a familiar pose; so we believe after all we have shown up our six-foot friend much more true to life than would be seen in an ordinary portrait photograph.

Mr. Holtermann has come to be one of the most extensive and successful bee-keepers in the United States or Canada. We would not dare to tell the enormous crops of honey he has secured. He is emphatically a bee-man who not only practices what he preaches, but who, in the common parlance of the day, "gets there." We anticipate that hereafter our readers will pay more particular heed to some of his tricks of the trade, and hence we place this one before the public; for it should be clearly understood that he is a man who makes a study of how to make short cuts.

While we believe that bee-keepers as a class are intelligent and progressive, there are many who depend too much on their hands—that is, simply brute force, and not enough on the gray matter in the upper region of their anatomy. Our Canadian correspondent works with his head and hands.

CHARACTERISTICS OF THE RACES.

BEFORE coming to Medina our Mr. Bain had considerable experience with some of the different races of bees, including Carniolans, Banats, Cyprians, Caucasians, Holy Lands, etc. Contrary to the opinion of many, he regards the Carniolans very highly. He says that they protect their hives just as well as the Italians, and, what is of interest especially to the comb-honey producer, they cap their honey snowy white. The common belief in regard to Carniolans is that they swarm excessively, and most bee-keepers feel that the swarming problem is enough of a proposition when Italians are kept, and that, if it were any worse, comb-honey production would be well nigh impossible. Mr. Bain points out, however, that Carniolans can not be handled like Italians. They require a larger hive on account of the prolificness of the queens, the twelve-frame not being too large. If these bees are put into eight-frame hives and managed according to methods laid down for Italians, excessive swarming is the result every time.

One serious fault of the Carniolans that has to do especially with the queen-breeder

and also with the honey-producer is this: There is less difference in the color of a Carniolan queen and the workers than that of the Italian queen and workers; and this fact, together with the tendency of Carniolan bees to remain still on the combs (very often a queen remaining under other bees), makes it a hard proposition to find her. Carniolans are not nervous-acting bees, and yet they seem to protect their hives as vigorously as the best Italians. This very fact, however, makes the finding of the queen more difficult, for the queen herself is likely to remain hidden, scarcely moving at all when a comb is taken out.

Banats have many of the good qualities of the Carniolans, and they cap the honey especially white. However, they more nearly resemble the black bees in appearance, and it would be difficult to keep the blacks and Banats separate.

Mr. Bain finds hardly one redeeming feature among the Caucasians, although they do cap honey white. In spite of the claims made as to the gentleness of these bees, they are nervous in their actions, and a good many of the colonies of this race are very difficult to handle on account of their tendency to sting on the slightest provocation. These bees are excessive propolizers, and no better honey-gatherers than average Italians. One point that we do not remember having seen mentioned is this: It is much more difficult to introduce a new queen to a colony of Caucasians than to Italians, for instance. They will start cells in spite of all that can be done, and about the only way is to remove all brood or else wait until the brood is so far along that cell-starting is out of the question.

With Cyprian bees, Mr. Bain's experience has been similar to that of practically all bee-keepers who have tried these bees. They have lots of vim and energy, but they use it in a bad way, for they are more vicious by far than any other bees that he has ever had any thing to do with. The boldest and most hardened veteran in the bee-keeping ranks is usually glad to get rid of such bees as soon as possible, for this one feature counteracts all the good characteristics that they might have. It is possible that the bees coming from southern Italy contain a little of the Cyprian blood, for they are generally very cross or much harder to handle than the leather-colored bees coming from further north. Cyprians are well marked, the bands or stripes being very distinct.

Golden Italians are, as a rule, more irritable than the leather-colored, but they cap their honey whiter. If careful methods of breeding were followed it would seem as though golden Italians might be reared especially for comb-honey production, perhaps, that would be hardy and also gentle. We believe that many breeders of golden bees pay more attention to color than to any thing else; but perhaps these breeders can not be blamed, since there is quite a demand for the golden color.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

THAT LAST Straw, page 715, fourth line, says exactly the opposite of what I mean. Just cut out that "do not."

D. M. MACDONALD says, page 618, "My preference would be 9 frames." I suppose he uses the British standard frame, $14 \times 8\frac{1}{2}$. Nine of them are equivalent to six $\frac{2}{3}$ Langstroth.

MR. EDITOR, I don't think you've given the right answer to the question, "Why are you optimistic?" p. 677. It's because you are a born bee-keeper. A born bee-keeper is always optimistic, honey-dew or no honey-dew.

R. F. HOLTERMANN, I agree with you, p. 715, that burr-combs are bad about pinching bees; but you have got to show me that a bee thus pinched is angry upon being released. I never knew one to fly at me, or show signs of anger.

QUEENS STOP laying earlier than the beginner supposes; but doesn't brood-rearing generally stop before the queen quits. I suspect it from finding eggs and sealed brood in the hive, but no unsealed brood. [You are probably right.—ED.]

O. B. METCALFE, p. 691, is correct in saying that the wings have a slight vibration when a queen pipes. But that does not prove that the wing makes the sound. Cheshire says, Vol. II., p. 157, that it is certain that the wings do not make the piping sound, "since queens clipped so vigorously that not a vestige of wing remains can be as noisy as others."

YOUNG FELLOW, paste in your hat what G. M. Doolittle says, last of p. 616. With *abundance* of honey in the hive in spring, my bees have all the brood they can cover; and what possible good can be done by stimulative feeding or spreading brood, unless I were in a region where there is a considerable period of absolute dearth between the earliest flow and the next flow?

F. R. BUCHANAN, that cushion may be a good thing in spring after bees are outdoors; but is it any advantage in cellar? My bees have only the board cover over them, and they could hardly winter better. And don't you believe my two-inch space under bottom-bars serves as good a purpose as to take up room in the cellar with the extracting-super you mention, p. 668?

FORMERLY I supposed European foul brood was five times as bad as American. After some personal acquaintance with European and a good deal of reading about American, I now think I'd rather have European, twice over. Possibly personal acquaintance with American would change my views, but I doubt it. [Like our friend

Dr. Miller, we formerly held the opinion that European foul brood was far harder to control than American; but late developments would seem to indicate that the European type can be easily handled by an up-to-date bee-keeper. We know that the American type of the disease is a hard proposition to handle, even by the expert.—ED.]

RALEIGH THOMPSON says, p. 736, that man will never produce a non-swarmling race of bees. Better not be too sure what man will or will not do. A few years ago some people said man would never fly, and now he is sailing in all directions. Only 5 per cent of Dadant's bees swarm. Either $\frac{1}{10}$ of his bees are non-swarmlers or else he has traveled $\frac{1}{10}$ of the way toward a non-swarmling bee. [We share the feeling of Mr. Raleigh Thompson, that man will never produce a non-swarmling race of bees. Even if he can produce a strain that will show but little disposition to swarm, the probabilities are that that strain, after a time, will revert back to the original normal type. The difficulty of producing bees with certain characteristics is owing to our inability to control the male parentage. Nature has set up an almost impassable barrier by which it seems almost impossible to change the original type to any great extent. A few years ago we ran across a "sport" in the form of a queen that produced bees that showed a tongue reach very much in excess of that of ordinary bees. It is a well-known fact that some bees can reach further into the blossoms than others, although some authorities dispute it. Prof. Gillette, of the Colorado Experiment Station, found that there is considerable variation. Well, now, with our original strain of long tongues we found there was a strong tendency in subsequent generations to revert back to the original or normal type, and *that* in spite of all we could do. We are in hopes some day of running across another "sport," because with that sport we may be able to demonstrate to the satisfaction of some of the best bee-keepers in the country that these bees do have some particular merits. The Dadants have never claimed to have a non-swarmling race of bees—or at least we have never seen a statement from them to that effect. They have repeatedly said, however, that their control of swarming was due to their large Quinby hive and their methods of management. For many years the Dadants have had very little swarming; and during all of this period they have had a great many different strains. They simply take the normal type of bees and place around them certain conditions by which there is but little disposition to swarm. We are sorry we can not agree with you, doctor; but it seems to us that Raleigh Thompson came very near hitting the nail square on the head. In saying this we do not mean to imply that there is not a difference in races, for there surely is. Carniolans will swarm more than Italians.—ED.]

Bee-keeping in Southern California

BY MRS. H. G. ACKLIN, GLENDORA, CAL.

Do not forget to attend the State convention, which will be held in Chamber of Commerce, Los Angeles, the latter part of this month.

The "bee-man" of a village recently visited informed me that at least ten swarms of bees were ensconced in the two churches. The ministers of those congregations must have been very entertaining to counteract the drowsy effect of the hum of all those bees, coupled with the hot Sundays of last summer.

I must be getting dull, for I wondered for the space of a minute recently why the frames struck the bottom-board, before I discovered there were no rabbets on the hive; also why the frames caught when trying to take them from the hive, when I found they were spaced with one-inch shingle nails.

I discovered a new method of wiring frames the other day while examining some bees near San Dimas. A wire, somewhat heavier than hay-baling wire, was wrapped around one end-bar two or three inches from the top, then taken across the frame and wound around the other end-bar. Both ends of the wire projected out an inch or so.

An eight-frame-hive bee-keeper inadvertently gave the ten-frame hive a big boost when he gave, as one reason why he left supers on, was to have a place to put combs of honey in spring, so empty combs could be put in their places for queens to lay in. He said his queens were generally crowded out of the brood-chamber. Still this brother throws down the gauntlet to any ten-frame man to beat him in the output of honey.

Last summer some friends requested me to help them get started in queen-rearing, so I told them to take queens away from two strong colonies on Wednesday and I would be there on the next Saturday. At the appointed time we all went to work, and in the course of a couple of hours they understood the Doolittle method so well that they requested their apiary of 200 colonies in the next two months, and now have a splendid lot of vigorous young queens. They bought a queen to breed from, but even that item of expense is not necessary if one has some good queens in his own yard. More attention to queens would give larger honey crops, the same as

fertilizing an orchard causes greater yields of fruits.

I wonder how many bee-keepers know that adulteration of honey is going on right in our midst. Do not rest easy and say that is always the case, and it can not be stopped, for that nefarious practice can and must be stopped. It has been stopped in other States when bee-keepers became determined enough about the matter, and the same result can be accomplished here. Uncle Sam stands behind us now in regard to pure food; and if bee-keepers will work together these swindlers can be put out of business. No matter whether it be the small grocer who puts just a little glucose in the honey to keep it liquid, or the wholesale man who mixes tons, the effect is the same. People soon take a dislike to glucosed honey, and stop eating our honey altogether. So bee-keepers lose money on two counts—less honey being consumed while the output is increased.

How can this adulteration be stopped? There are many ways in which bee-keepers can assist the pure-food officials in running down this fraud. The best way to begin is to get intensely interested and enthusiastic over the matter and be aggressive. Let every bee-keeper constitute himself a committee of one to be on the lookout; and when suspicions are aroused in any quarter, buy some of the honey and have it analyzed; and if it proves to be spurious, follow the trail right up till the guilty parties are arrested. Our State Association should appoint a live committee to help the rank and file of bee-keepers in this matter. The committee is not to do all the work, by any means, as this is every bee-keepers business; but all should be continually on the lookout, receive reports and suggestions from bee-keepers during the year, and bring in a written report of the situation at the next meeting. In my old home State a few bee-keepers in and around the twin cities made things so warm for the adulterators that in two or three years they were all forced out of business; and we had only our State law behind us at that time. But one of the twin cities, St. Paul, is the capital city, which, of course, simplified matters for us, as the State chemist was our friend, and would cheerfully analyze all honey taken to him. I am not familiar with our California law on adulteration of honey; but if it is not all it should be there is more work for the State association to do in getting a proper representation before the legislature in time to plead our cause. All bee-keepers' associations in our State, whether county clubs, district unions, or State organizations, should unite under one banner in fighting this evil, and send a large and enthusiastic delegation, composed of delegates from each society, to the legislature this winter to represent the bee-keeping industry of our State. I feel sure the Los Angeles Co. Club will assist this good work in every way possible.

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

Comb honey, even though firmly attached to the wood on all four sides, will break out considerably in shipment unless the cells next to the wood are all filled with honey. It is not necessary that the cells be sealed, which would, however, give added strength; but it *is* important that sections shipped in cold weather should have honey in the outside cells. I have had a good many combs break out that were attached to all four sides, some of it when being shipped less than fifty miles, and packed in carriers with straw beneath and all around. Comb honey certainly breaks out easily in cold weather, or the freight-handlers drop the crates very heavily. Both conditions are doubtless true.



WARNING TO FREIGHT-HANDLERS.

I have just barely noticed the small stamped words on the top of cases of comb and extracted honey, "Fragile, handle with care—this side up." Now, these words should be printed on papers about six by eight inches, with a red border, and in red ink; then when these are pasted on the top of a case of comb or extracted honey the freight-handlers will see it any way, and will be more apt to think they are handling glass-ware, nitro-glycerine, giant powder, or some such article that has to be carefully dealt with. Honey in 60-lb. cans should have the cases bound with strap iron if the honey is liquid. This will prevent the mashing of the case and consequent bursting of the can. A cleat on the ends of the 60-lb. can-cases gives a much better hold than the sawed-in hand-hole. The case is not so liable to be dropped because of the fingers losing their grip on the case.



AMOUNT OF HONEY SOLD IN BOULDER.

One grocer in Boulder in the past two months has sold one case of comb honey and one dozen pint jars of extracted; this is the lowest record for Boulder that I know of. The largest sale in the same time was about fifteen cases of comb and 400 pounds of extracted put up in pint, quart, and two-quart Mason jars. Boulder has about 25 stores, and these have used between 150 and 200 cases of comb honey, and perhaps a ton of extracted. This is between six and seven thousand pounds of honey for a city of twelve thousand people in two months—half a pound for each person in two months. This seems low, but I doubt whether there are many cities the size of Boulder, or any size for that matter, that can show such a record, especially when comb honey retails from 17½ to 25 cts. per section, and pint jars of extracted bring 25 to 30 cts. each.

When we have a good crop, and the quality is fine, the stores have handled two and three times this amount in the same time. At such times comb honey sells for 12½ to 15 cts. retail.



BEE-KEEPING AND HOMESTEADING.

Several bee-keepers in the East and middle-western States have written me asking if homestead land might be secured in localities where bees could be profitably kept. Their idea was to have the bees make honey and pay expenses while they were getting the new land in a crop-bearing condition. There are several ways of securing government land. It may be had under the desert-land act, which does not require residence upon the land, but requires \$1.25 per acre of improvement each year: 320 acres may be taken under this act, and the final proof may be made and a deed secured as soon as water is placed on the land for irrigation. Twenty per cent of the land must be irrigated before the final proof may be made. There is considerable of this land still to be had, but the chances for getting water on it are rather slim in many of the districts where there is land still untaken. On all such land, even where water is put on soon after filing, several years will pass before sufficient alfalfa is in bloom to furnish the bees any forage. However, one might hold this desert land and live in the older-settled irrigated districts ten, fifteen, or twenty miles distant from the desert claim.

One could doubtless get homestead land within ten or fifteen miles of good bee locations, and live on the homestead and drive that distance to care for the bees. But I would not encourage any one to look for a homestead where bees could not be kept from the start. The land to be taken under the homestead and desert-claim acts is worth taking up, I feel sure, for land is rising in value, and the progress of irrigation is rapid. Furthermore, dry farming is making rapid strides; it makes one wonder why any one irrigates at all to see some of the dry-farm crops exhibited at the fairs.

I would never discourage any one from coming into any of the Western States and getting land; but good judgment is needed here as well as in any place, as we have our full quota of worthless tracts, and sharks who are willing to sell them at a fancy price.

The State maintains an immigration bureau that will gladly furnish reliable information on any part of Colorado. If any one intends to move or is interested in the West he should write to the Colorado Immigration Bureau, State Capitol, Denver, Colorado.

Will salt air affect the bees? There are no bees on this island (Martha's Vineyard). I do not know why. The island has 30,000 acres, North Tisbury, Mass. F. B. FENNER.

[It has never been observed that salt air, so called, in the vicinity of salt water, has had any deleterious effect upon bees. We know of no reason why it should.—ED.]

Notes from Canada

By R. F. HOLTERMANN

THE RENEWAL OF COMBS.

In the *Leipziger Bienen-Zeitung* for November, 1910, J. M. Roth, under the heading "In the Light of Practice and Experience," condemns a recommendation by Dr. Zander, that combs should be replaced in the brood-chamber every two years. Dr. Zander's object in part is to prevent the spread of foul brood and other diseases of bees. There is no doubt that changing all the combs in the brood-chambers every two years, and rendering the old ones into wax, would be a pretty effectual way of preventing foul brood from getting much of a foothold in a district. However, I am afraid this practice would just as effectually bar profits in bee-keeping. Just think of melting up 100, 1000, or 5000 combs because of the *possibility* of foul brood!

THE ORIGINATOR OF THE FLOUR PLAN FOR INTRODUCING QUEENS.

On page 548, Sept. 1, I alluded to Mr. Jos. Gray as a British bee-keeper who originated the flour plan of introducing queens. Mr. D. M. MacDonald, in the *British Bee Journal*, takes exception to this statement of mine, and, referring to Mr. Gray, says, "If he did, I never heard of it until now, and I most decidedly place the discovery of the successful application of flour as a bee-quieter to the credit of a Scotchman—not the writer." All I can say is that Mr. Gray noticed my reference to him and made no objection to it. Mr. MacDonald, however, appears to know what he is talking about, and in the future I will make no effort to give any one the credit of being an originator for fear of making mistakes.

CARNIOLAN BEES.

Mr. Ralph Benton, in the November issue of the *Bee-keepers' Review*, has the following to say in regard to Carniolans: "It was with interest that we learned of a colony of Carniolans, of the best stock obtainable in this country, that withstood the black brood when Italians on every hand were infected and reinfected; and, more than this, the colony in question supplied to weak colonies about it some twenty frames of brood during the spring months. It must not be construed that we base our estimate on the resistance of Carniolans entirely upon this single colony. . . . Our real estimate of Carniolan bees has been arrived at through experiments with a large number of queens sent to the infected region; and, as we have said, they take their place beside the Italians as resistant stock, and one more good trait is to be identified with this irresistible and excellent variety of bees for the commercial bee-keeper." I think it is well that Mr. Benton mentioned "commercial bee-

keeper," for I doubt if it is wise for one who does not pay very close attention to bees to bother with Carniolans. It is also unwise for any one who has not mastered the prevention of swarming to keep Carniolans; but for any one who knows how to control the swarming impulse, which is very strong in these bees, I know of no strain which is their equal.

ARE CARNIOLANS BLACK?

Mr. D. M. MacDonald, referring to me, says, "By the way, I looked on this Canuck as a very accurate writer on bees until lately, when, in reasoning against my claims for blacks, he grouped Carniolans with this variety." I suppose it is wrong to call a cow black if she has a white foot, or a house a red brick house when in its construction wood, mortar, nails, glass, etc., are used. In the same sense, Italians are not yellow nor Carniolans black, for these latter are black bees with silver or yellow bands. If we get down to fine points, is there such a thing as a black bee at all?

I believe we are far too careless about the use of language, and, although I am considered too particular when I hold writers to the words they use, I shall not try to discourage the few like Mr. MacDonald, who believe that a language should "state what it states."

MAL-NUTRITION VS. LACK OF ELIMINATION.

Our friend W. Z. Hutchinson, after spending some time in a hospital, has discovered that his trouble was not what he wrote me months ago, lack of elimination, but mal-nutrition. Editor Root and I could have told him this long ago, for we both knew, after being taught by Dr. J. M. Lewis, Rose Building, Cleveland, O., that, if the body is properly nourished, the elimination will soon take care of itself, and that a great many troubles, as catarrh, indigestion, nervous troubles, etc., exist because the body is not properly nourished and built up. In the majority of systems of treatment an effort is made to overcome the effect rather than to remove the cause, and fresh attacks of the old troubles are only hanging over the patients' heads, to fall at any moment. Dr. Lewis strikes at the cause, and the effect disappears like magic.

I wish that Dr. Lewis might make observations on the effect of bee-stings as a cure for rheumatism. With his method of making a diagnosis the effect could be very closely followed. Could not Dr. Lewis be induced to make a scientific investigation along this line? Rheumatism may manifest itself in some particular part of the body after being in a latent condition in the blood for a long time. Certain local treatment may bring into activity the organization for eliminating the impurities in that part of the body, and yet that remedy may have no effect upon the system generally. Then the disease, unless something else effects a cure, may manifest itself elsewhere when conditions for such are favorable.

Conversations with Doolittle

At Borodino

SHOULD A BEE-KEEPER HELP HIS NEIGHBORS TO START WITH BEES?

Do I have exclusive right to the locality that my bees cover? My conclusions are that anybody who would encroach on ground already fully occupied by myself is not quite what a good man should be.

I would agree with you provided the occupant is one who is about to change his location in search of a better one, and therefore comes and settles down near you; but it more often happens than otherwise (at least such has been my experience) that the one who may injure you the most is the man who is already an owner of a large area of farming land, and who, after reading the bright side of bee-keeping, as given in our books and papers, or who, on account of poor health, or because of *your* reported success, concludes he will try his hand at the business. Such a man does not wish to leave his present location to start an apiary, and he could not well do so, even if he chose. He reasons that his broad acres of pasture, woodland, etc., produce many pounds of nectar, and that this is his by reason of the cash he paid for the farm; so he starts out with the desire, perhaps, of keeping only a few colonies for his amusement and for the honey that he might get for home use. His first year may be a good one, and he gets in love with the pursuit, when the question of your priority and his extension of the business is now forced upon him. He feels that, since he owns a large farm, there is no reason why he should not keep all the bees he desires, and that, if you think you can crowd him from his own fields by keeping more colonies, he will put in ten colonies to your one.

Such a man would probably be going to extremes; but could you give any good reason why your bees should have a right to forage on his clover or on his basswood that was growing on land that his money had purchased long before you ever thought of keeping bees? All this is not an imaginary case, as I can show you by a bit of personal history.

I was born and brought up within twenty rods of where I know sit. Father kept bees when I was a small boy, having as many as sixty colonies at one time; but these all died of American foul brood before I was fifteen years old. When I became of age there were about 250 colonies within a radius of three miles of us that were kept by five or six different parties, one man in particular having 120 colonies about a mile away. After reading a book which fell into my hands I became interested, and father and I talked the matter over, with the result that we purchased four colonies some time in the spring when I was twenty-two years of age. The following fall he gave me

his part of the bees, and I started out alone in the business. After I had increased to 30 colonies the man who had 120 colonies a mile away came to me one day, saying that I was injuring his business, and that as he had a large apiary before I started, he had a priority right, and I ought to quit and leave him the whole field. I told him at once that father had kept quite an apiary of bees long before he ever thought of keeping any, and that I expected to continue the business as long as it was profitable. Furthermore, that we had a farm, while he owned only a house and a half-acre lot, and I said I did not see why my bees did not have a good right to visit the clover and basswood on our own farm. He considered me in the wrong, but I felt justified. Well, right or wrong, I lived to see the time when not one of the owners of the 250 colonies that I mentioned kept bees any longer, and so I had the whole territory to myself.

Soon after this a colony of bees was given to a neighbor farmer, whose land adjoined ours. As we were the best of friends, he often came to see me, and, of course, we talked bees. The next spring he told me that his colony was doing nothing, and I saved it for him by giving him a frame of hatching brood, after finding that it was all right except being weak in bees. From this one colony he increased after a while to over forty, and he often said that he would have had no bees if it had not been for me.

Two other neighbors started in soon after this, and I often went with them to see their bees, and all three came and visited me. I was glad to have them succeed, as they all owned large farms. I well knew that, if I told them I had a priority right, they would be the worst rivals I could possibly have; and I was doing only as I would be done by if I had been the one just starting. After my sixty-odd years of life this has proved a good rule to be governed by.

As I said at first, if some stranger were to move from 50 to 200 colonies into my immediate vicinity when there was plenty of unoccupied territory elsewhere, I should hardly consider him a good man, as you expressed it; but with friendly neighbors who wish to start with bees the case seems different. I believe in letting live as well as living; and if my neighbor desires to start in bee-keeping there is no law, moral or legal, to hinder him from so doing; and after he has once started, I believe he will cause me much less trouble if I treat him in a neighborly way than if I were to show him that I thought he had no right to keep bees.

[Our correspondent has answered this much-discussed question very fairly. The legal aspect of cases like this have never come up, and probably never will, because bee-keepers are not agreed as to what even the moral rights are. In cases of old neighbors who have for years owned land from which the nectar is gathered there can not be any be any question that the new bee-keeper has as good a right there as the old. ED.]

General Correspondence

EUROPEAN FOUL BROOD.

Some Characteristics of the Disease; is it Possible to Cure by Six Days of Queenlessness?

BY DR. C. C. MILLER.

In the course of last summer I gradually fell into a theory as to the workings of European foul brood, which I here give for what it is worth. The disease is conveyed by means of bacilli—only in rare cases by means of spores. When a larva becomes infected, it dies when three or four days old. It may die younger, and in some cases it does not die till after it is sealed. As soon as a larva dies, the bees may start to remove it, or it may be left until it dries down into a scale. If they begin to remove it as soon as it dies, the juices of the dead larva are so little affected by the disease that they are still pleasant to the taste of the nurse bee; she licks them up, just as starving bees suck up the juices of unsealed larvæ, and when she feeds the next larva it gets a dose of the bacilli and is doomed. If a larva that has died from the disease is not torn open very soon after death, it then becomes offensive, and its juices will not be licked up. It will dry up into a scale, and will then be carried out, but there will be no continuance of the disease from that scale, for the bee that carries it out does not eat any of it, and so can not feed any of it to a larva. If a larva is sealed before it dies, no disease will come from it; the dried-up larva will merely be carried out later on. The rule is that the disease is continued only from unsealed larvæ that have lately died, perhaps within 24 hours of their death. There may be exceptions. Occasionally a spore may get into the food of a larva; but bees don't make a practice of going about hunting up filth to feed to their babies. At the table of the neatest cooks in the world you may occasionally get a hair in your mouth; but neat cooks do not make a practice of serving up hairs by way of dessert.

There's the theory. Please remember that it's *only* theory. I don't *know* that it's true; but facts as I have observed them fit in well with the theory.

Let us see how the theory works out. We will remove the queen of a diseased colony, say June 1. All the brood will be sealed by June 9 or 10, and at or after that date there will be no diseased larvæ with juices that a nurse-bee would relish. So no larva will receive infected food if it is hatched from the egg as late as June 10, and the disease will cease to be. But if a larva hatches from the egg June 10, that egg must be laid June 7. So if the queen is removed June 1, and the same or another queen given June 7, a

cure will be effected. In other words, six days without any laying makes a cure.

When I reached that point I said, "If that theory is true, all that is needed is to cage the queen for six days, and the colony will be healed. Let's try it." It was then well on in August, and I had only two diseased colonies on which to experiment. One of them was No. 105, which had a queen of the previous year. I caged the queen Aug. 24, and freed her Aug 30. Eight days later only clean brood was to be found in the hive. No. 67 had been a diseased nucleus, to which, by way of experiment, I gave a virgin which I found laying July 19. It continued diseased, in accordance with Mr. Alexander's insistence that a colony must be strong in order to be cured. Aug. 23 it had some brood in each of three frames, and I was in pretty bad case. I gave it five frames of brood with adhering bees, and caged its queen. Aug. 29 I let the queen out of the cage, and ten days later I found the brood all clean.

Please understand that I don't recommend caging a queen six days as a cure. I did that only as an experiment, and would much rather have a vigorous young queen, for a queen that has lived for some time in a foul-broody colony generally has a lousy appearance, and is not so good as she ought to be. She may not be diseased, and I do not believe she would give the disease to another colony; but she is the worse for her experience, and is no longer up to the mark. I have, however, great faith that a cure may be expected if the old queen is killed, and six days later the colony receives a laying queen that is young and vigorous. In the two cases I have mentioned, the six days of queenlessness proved sufficient to effect a cure in spite of the retention of the old queens.

If six days' queenlessness cures, then there ought to be no trouble about curing by killing the old queen and giving a cell or a virgin at the same time. It is possible that five days of queenlessness might answer, and I believe a good many cures would occur from three days of queenlessness. Even a single day without eggs ought to be some help, for we know that a little of the disease will be cleaned up by a strong colony without any queenlessness.

It is not hard to believe Mr. Green when he says that a large percentage of cures occur from merely changing queens, for there is always some break in brood-rearing upon the introduction of a new queen.

I think I hear some one say: "But if your theory be correct, then no case should last over winter, for surely brood-rearing stops more than six days in winter." Well, are you sure that no mild cases are cured in winter? And doesn't every case have a big setback? If every case started in full blast in the spring, just as it was the previous year, wouldn't there be enough healthy brood left to continue the colony throughout the season? And with millions of spores left in the hive, is it at all strange that some of

them should get into the babies' pap? But I confess my answer does not seem entirely convincing, and I don't blame you if you want to be shown a little more before accepting it.

Well, anyhow there are those two cases cured by six days of queenlessness. If you have any European foul brood to fool with next summer, try the plan of killing the queen and introducing a vigorous young queen in time to have her begin laying six days later.

In some respects it would be much better if I had waited two or three years to give thorough trial; but it will be much better to have others help. If we can save all our combs, at no greater cost than the loss of six days of egg-laying, don't you think the thing well worth trying?

Marengo, Ill.

[We should be pleased to hear from others who have had experience with European foul brood. In the first place, is Dr. Miller correct in saying that the scales and sealed cells containing dead larvæ do not transmit the disease, and that infection comes from larvæ not more than four days old? These are interesting facts if true.

Again, is Dr. Miller correct in surmising that six days of queenlessness will effect a cure? While our correspondent doesn't pretend to say as yet that he has a new cure, he simply desires to know whether he is on the right lead. Tell us, friends, what you know. Surely there must be many in New York who do know.—ED.]

PAINTING HIVES IN CALIFORNIA.

Zinc Needed to Make the Mixture Durable.

BY E. M. GIBSON.

Before coming to this coast, I, too, could have endorsed Dr. A. F. Bonny's article in reference to paint, as you did in your editorial, page 576, Sept. 15; but if you should tell an old-time painter who is acquainted with conditions here that white lead alone is best for this climate he would "jest laff." If in this locality you should paint a hive and let it stand out eighteen months, and had occasion to handle it at the expiration of that time, your hands and clothing would look as though your hive had been white-washed.

I was fortunate to get acquainted with a good painter soon after coming to California, and before I commenced to paint my hives. He cited instances where new comers would have nothing but white lead (notwithstanding his advice to the contrary), and he mentioned others who used the lead-zinc mixture. The buildings having been painted with white lead had to be painted again the second year, while those painted with lead and zinc looked well at the end of six years. I was surprised, for I had been led to believe that there was nothing better for all climates than white lead. We use a

mixture of 60 per cent zinc, 40 of lead, and the best linseed oil. If this mixture is applied as it should be it will not crack or scale, and can be painted over and give as good results as if only lead were used. If a thick coat is required it should be applied at different times, and be well rubbed down.

Let me tell you how well paint should be rubbed down. Apply the paint so sparingly, and rub so thoroughly, that, when any portion of the hive is finished, your brush is so dry that you can rub it over your clothes and it will not soil them. But I would not advise any one to try this test on his best suit. The one we usually paint in will do to experiment on. Do not take this too seriously; but I want to say something to impress on the minds of the readers of this the importance of thoroughly rubbing the paint into the wood.

I have painted hives within the last week that have been in use for fourteen years, and have had several coats of the same mixture I have described, and no one could tell by looking at the outside that they were more than a week old, and I do not sandpaper them, for they do not need it. I use a small brush to apply the paint to nail-holes, dents, and rough places. If the large brush is used, one is likely to get on too much paint; and if too much is applied and not rubbed off it will look worse in two or three months than it would if it had not been painted at all.

TOO LARGE AN ENTRANCE IN SOME LOCALITIES CHILLS BROOD.

Dr. Miller, that New Mexico chap's head does not need fixing. His "noter" is all right—Stray Straws, p. 404. The subject of ventilation is one wherein the word "location" will consistently apply. Several years ago I put wedge-shaped pieces between the hive and bottom-board, making the entrance one inch wide. The brood of the small colonies chilled. Those that were large enough to protect their brood did so; but the queen did not lay eggs within several inches of that wide entrance. I was not long in getting those wedges out after making an examination. Not satisfied with this experience I moved the super $\frac{1}{4}$ inch over the lower hive to give ventilation and save the bees time by not having to crawl up from the lower entrance; but I do not remember ever seeing a bee enter there, but saw a few fly out. The bees did not store a particle of honey within several inches of this opening, while the combs at the back part of the hives (where there was no ventilation) were filled and capped. I tried many other methods of ventilation, such as auger-holes, blocks at the corners to raise them from the bottom-boards, etc., but it will not do in this climate. I kept bees in Illinois as a recreation from office work; and not only did I have the hives ventilated, but I had a shed built over them, and I could not make up my mind that they did not need it here until I got several knocks.

At the noon hour, July 8 (note the date), I read *Stray Straws*. At sunset, same date, I took my gun and went out to watch for a skunk that I had seen prowling around the apiary the evening before. I sat on a box not more than five minutes when I returned to the house for my coat. After reaching the apiary this time I stayed not more than ten minutes, because I was uncomfortably cold. There have been but two nights since April (we had desert winds and a week of very warm weather in April) when one did not need a coat after sundown and before sunrise. I have had occasion to ride at night in midsummer, but have never been out when I did not need a coat.

I am only about six miles from the Mexican line, and presume the climate here will compare favorably with the climate in which the "New Mexico Chap" lives. When we compare the foregoing with the sweltering summer nights of the East it seems to me nothing more need be added to convince the most dyed-in-the-wool advocates of ventilation that it will not do in all localities. We in California might say with as much propriety that the bee-keepers in the East ought to leave their bees out all winter without any protection, for we do so here.

ARE HONEY AND FOUL BROOD EVER IN THE SAME CELL?

In answer to my question, "Did any one ever see foul brood and honey in the same cell?" W. A. H. and J. G. Gilstrap, pages 412 and 419, both say they have. Is it not possible that the foul matter might have been in a cell by itself, and, in the process of uncapping, the honey and foul matter were drawn together, making it appear as though they were both in the same cell? I am sure I should not relish the honey I eat every day if I knew or even thought those little housekeepers were so slovenly in preparing their food, for I can not conceive of any thing more vile; and if they would mix nectar with that foul stuff they would not hesitate to mix it with any other unclean matter. My observations have led me to believe bees are very cleanly in their habits when environment permits. I notice that, before nectar or eggs are deposited in the cells, they are cleaned out and polished until they shine like the proverbial colored gentleman's heel. The eight colonies or eighty frames referred to in my article are now in use, and are marked with a cross on the top-bars. I notice them every time I extract. Now, will you kindly note carefully the manner in which they were obtained? The year 1905 was a good one. The bees were brushed on to foundation in the height of the honey-flow—not a drawn cell below the queen-excluder in which to store honey, so that, if any was stored, it had to go above among the foul brood; but not one particle was ever put into a cell until it was either cleaned out or torn down, and a new one built. Some of those combs have been used in the brood-nest, and I am as sure as we ever can be of any thing that I have not

a cell of foul brood in any of my apiaries. I have not seen any foul brood for some time, but in "harking back" I can not remember ever seeing foul brood capped after it had arrived at the stage of semi-liquid or matter substance. The cappings all disappear, but I do not call to mind at just what stage; but it is my impression it is before it arrives at this watery state.

I hope there is no one who reads this article who will think I am posing as a critic, for if he does he will be greatly mistaken; but I do not think that contributors should be only pawns in the game when things are written; for, though absolutely true for some localities, it would lead to disaster in others.

Jamul, Cal., Oct. 2.

[What our correspondent says illustrates most forcibly the effect of locality on management. We spent some days in Southern California in 1901, and one of the things that impressed us was the rapid drop in temperature after the sun went down. We are quite prepared to believe that what would be good practice in Ohio or Illinois might be very bad in California.]

We have been told before that for some localities a lead pigment alone is not as good a combination as lead and zinc combined. Southern California seems to be one of those localities.—Ed.]

PERFECT CONTROL OF BEES WITH ECONOMY OF LABOR.

BY J. E. HAND.

Continued from last issue.

In a former article we outlined certain correct methods of applying scientific principles for the control of bees in a location where the main harvest comes from clover and basswood or other early-blooming flowers. While the principles themselves are equally effective in every location, the method of applying them must be governed solely and entirely by location, and time and duration of the honey-flow. A little carelessness at this point will render the system less effective; however, the methods may be modified to suit every existing condition resulting from changes in the time of the honey-flow as we find it in widely distributed areas. For instance, in a location having a light flow early in the season, the main harvest coming from buckwheat, heartsease, or other late-blooming flowers, it is highly desirable to work for increase early in the season, and enter the main harvest with twice or three times as many colonies as were started with in the spring, and have them fairly boiling over with bees in time for buckwheat.

In the case we mentioned above we would open the side entrance to No. 1, so as to get the bees accustomed to using this entrance for a few days before making the first shift. This will hold part of the field bees in No. 1

when the first shift is made, which is desirable when forming increase.

Proceed as usual with the first shift; but instead of making a second shift we would, ten days after the first shift, remove colony No. 1 to a new location, putting an empty hive in its place, first placing in the center of it two combs of brood and bees from No. 1; then fill the empty space with combs or full sheets of foundation and give colony No. 3 a queen.

We have now trebled our number of colonies with very little manipulation, and there will be plenty of time to build them up strong in time for a late harvest. In order to build them up rapidly, such colonies should be fed when there is no nectar to be gathered. This is easily done since the equipment includes a feeder that is always in position ready for instant use.

The slight manipulations necessary for the perfect control of bees under the new system can hardly be considered as labor. It is mere child's play compared with other methods of swarm control. In all my bee-keeping experience nothing has given me greater pleasure and satisfaction than this simple equipment for controlling bees. Its principles are applied in such perfect harmony with the instinct of bees that it "hoodoos" them completely, and they work with a vim and energy fully equal to a natural swarm.

Its usefulness is by no means limited to swarm control, but continues all along down the line of bee-keeping methods with equal power for economizing labor. This system will give 100 per cent increase and one-third more surplus honey than any method of swarm control that has yet come to my notice, and with one-fourth the labor, the hives being so close together there is no traveling back and forth from one hive to another. Then at the close of the season the two colonies may be packed for wintering on the tenement-hive plan without moving a hive.

The swarming problem is solved, and the hive question is no more a fruitful subject for discussion, since one hive is practically as good as another, and all hives are but an open book when correct principles are applied by correct methods.

The only unsolved problem that I can now think of in connection with bee-keeping is, "What are the writers upon apicultural subjects going to do for subjects to write about?" Doubtless the new system will receive its share of attention; and when the battle of opposition and conservatism is over and the smoke has cleared away, its virtues will shine with an added luster. Its fundamental principles are as solid as the universe, and will so remain until the instinct of bees and the reasoning powers of man are no more.

The writer is preparing matter for a booklet entitled "Bee-keeping by Twentieth-century Methods," setting forth in a clear and concise manner the many ways in which the new system may be utilized to lessen labor and reduce the cost of honey produc-

tion, thus reducing the complex methods of honey production to a simple science with few manipulations. A careful reading of this will enable any one to produce paying crops of honey, and have his bees under perfect control *all* the time. Inquiries relative to the new system should be addressed to The A. I. Root Co., with whom we have made arrangements to furnish the equipment to bee-keepers.

Birmingham, Ohio.

HONEY-BEES, BUMBLE-BEES, AND WILD BEES FOUND IN THE SAME FLOWER.

BY T. P. ROBINSON.

Last year I observed what I term a "phenomenon" in the bee-world. In this country all members of the cactus family abound abundantly in many places; but in my immediate locality there are only the fewest to be found of any variety. Yet not over 100 feet from my house, just out of the yard, in fact, a very large cactus grows, known here as the prickly pear, and it was on the first blossom to appear on this bush in the spring that I saw all the bees above stated at work at the same time. I chanced by this bush, noticed the blossom, and there, to my astonishment, saw a huge bumble-bee, three honey-bees, and three wild bees, all in the same flower. I looked at them for quite a while, and saw that not one of the bees of the different species paid the least attention to the rest. They would tumble and root each other out of their way, and crawl over and under each other in the best of good nature, each one doing his very best to get all that there was in the flower. All were yellow with pollen. I am sure that this was the first bloom of its kind this season.

What made the episode more interesting was the fact that the bumble-bee was as large as all three of the honey-bees combined, and one honey-bee was as large as all three of the wild bees combined.

Bartlett, Texas.

Will Cotton Supplant Alfalfa in Imperial Valley, California?

You can see by the enclosed clipping that my "holler" in Oct. 15th issue, about cotton superseding alfalfa in Imperial Valley, had a good foundation, and that there is cause for alarm among bee-men here.

Imperial, Cal., Oct. 29.

J. W. GEORGE.

[The following, from the *Imperial Daily Standard*, is the clipping referred to:]

THE VALLEY OF THE GREAT STAPLES.

No one can tell how large the next cotton-crop acreage will be; but it is certain that it is going to be much greater than that now being harvested. In all parts of the valley, land is already being rented for the next crop, much of it to persons who have not heretofore taken part in the new industry. Estimates of the coming acreage run up to 50,000 and even 100,000. Certain it is that cotton has, in the average case, made good; and each year, as the growers become better acquainted with local requirements in the industry, the average yield will increase. Many lessons have been learned this year by the growers, and soon cotton-growing will be reduced pretty nearly to an exact science.



HOW R. F. HOLTERMANN CARRIES HIS TWELVE-FRAME HIVES INTO THE CELLAR. He lifts the hive as shown in Fig. 2, and then brings it up against his body as in Fig. 5. Positions in 4 and 6 put an unnecessary strain on the back, and interfere with walking.



WILLIAM H. CROWSON DEMONSTRATING BEES AT THE TRI-STATE FAIR
AT MEMPHIS, TENN.

CARRYING HIVES INTO THE CELLAR.

The Right and Wrong Way of Doing it.

BY R. F. HOLTERMANN.

[When we called on R. F. Holtermann last summer we were prepared to catch him in some moving-picture stunts: but, unfortunately, at the time, having to hurry on, and his yard being located some distance from Brantford, we did not think it practicable to secure any pictures. Along this fall he called at Medina on some business; and while here we availed ourselves of the opportunity of catching him in a moving-picture stunt, the result showing his method of carrying bees into the cellar, as well as the *wrong* way of doing it.—ED.]

It is important in all one's operations to plan to reduce the labor and physical exertion used in accomplishing his work. It is this in part which makes men valuable in

the factory, in the workshop, on the farm, and in the bee-yard; and when one is working for himself he reaps the full benefit of such planning.

The further out on the bar of a 240-lb. scale we draw the weight, the greater the strain required to lift it; and so when we carry weights, the nearer we can keep them to the point of suspension the less of an effort is required on our part in carrying them. The closer I can keep a given weight to my body, the more convenient it is for me to lift, and the less effort it takes to carry it. In carrying a hive, what a bee-keeper should aim at is to pick it up and carry it to the cellar with as little strain on himself as possible, and

at the same time not disturb the bees. They should not know that the hive is being moved from its position on the hive-stand. This can not well be done if the general method of carrying a hive is used. For example, a hive taken from the back by the handholes, as in illustration No. 4, rests at its back against the legs of the operator; and as a step in advance is taken the hive is forced forward with one leg, only to be struck with a bump by the other leg as he walks. Such motions result in jarring the hive and disturbing the bees, to say nothing of the very great inconvenience and strain on the apiarist.

In carrying the bees to the cellar there are generally two of us. We put two twelve-frame hives on a hand-barrow and carry them into the cellar. We have, however,

quite often carried them one at a time. Often I have carried the majority of 400 colonies out of the cellar alone, and have even taken them alone down from piles tiered four and five high. There are very few twelve-frame L. hives which run over 100 lbs. in weight, and any ordinary able-bodied man should be able to shoulder unaided a bag of wheat which weighs 120 lbs. I would much sooner handle the twelve-frame Langstroth hive, and I think there is more money in it than handling the bag of wheat.

Hives should be on a stand so arranged that there will be finger room between the bottom of the hive and the stand, as shown in Figs. 1 and 2; then the hives can be readily picked up. In our case the wooden covers are removed from the hive before lifting, leaving the cloth or honey-board over the frames exposed as shown in the illustration.

We then show up to the hive, taking up our position directly behind it, as in Fig. 1, and stoop down, putting one arm on each side of the hive and the hands (for which there is a convenient space between the hive and stand) under the bottom of the hive as in No. 2.

We then left the hive, and, in the process of so doing, bring the front of the hive uppermost, and of necessity the cloth or honey-board against the breast and stomach, as in Fig. 5. In this position we hold the hive to the body closely and firmly. When so held, even when walking steadily, there need be no jarring of the hive by its changing its position relative to the body. In this position, too, on the principle of the extended weight on the scale-bar, it takes less effort to carry it than when carried as shown in Fig. 6 or as in Fig. 4. My hive is 20 in. long, but only about 10 high.

No. 4 shows the hive in the worst position of all. The hive is constantly bumped by first the one leg and then the other.

I have pointed out (to men learning bees, and men otherwise working for me) this method of carrying, and there has been but one verdict, viz., "It is much easier than any other way."

Brantford, Canada.

ANOTHER BEE STUNT.

Bees Handled in a Cage by an Operator Wearing only a Bathing-suit.

BY JOHN M. DAVIS.

I am sending you a photo of Mr. Crowson, who demonstrated for the Tri-State Fair at Memphis the first week in October, showing how bees can be handled with impunity. At times his head was literally covered with bees as was all of his body, though he was dressed as in the photo.

The reporter who wrote up the matter made a good many blunders as usual that would look foolish in a bee-journal, where

readers are better posted than ordinary newspaper perusers.

Mr. Crowson is my assistant queen-breeder, and came to me totally ignorant of bees and their management; but you will note that his demonstrating is in the front rank. Spring Hill, Tenn.

THE STUART FOUL-BROOD CURE TESTED.

BY REV. G. A. WALTER.

From three colonies last year I have increased to nineteen, about half of which I purchased from my near neighbors. Some two-frame nuclei which I bought from a prominent queen-breeder developed American foul brood. When I first discovered the disease I burned up the first frame, comb and all, but the bees got at some honey which I had cut out, and so spread the disease through my whole apiary, with one or two possible exceptions.

Without experience with the disease, I read up on it and began experimenting. The awful drouth made it hard to do any thing in July, August, and a part of September. However, in July I took about a dozen of the worst foul-broody combs, and, according to Mr. Stuart's plan, put them over two of my strongest colonies, which had the disease in a mild form, to watch results. Up to Sept. 15 the bees never touched the combs; but since that time they have done as Mr. Stuart says they would — they cleaned them up, and to-day, Oct. 15, I have some frames apparently clean and filled with honey. About 50 of these foul-broody combs have been put over other colonies, and the most of them are nearly all cleaned up so one would never suspect they were foul-broody. Some still have a cell here and there where the foul stuff has not yet been cleaned out; but in every instance it is in frames the combs of which are only partly filled with honey. Unless the bees put the honey into cells with the foul brood they are cleaning up the combs as fast as they need the room for honey.

I believe that, if I could extract this honey and let the bees fill them again, I'd get the same results Mr. Stuart does; but I have no extractor as yet.

One colony I shook on to frames with narrow strips of foundation in them, putting a queen-excluder over the bottom-board. These swarmed out; but what became of the queen I know not.

Three colonies I treated in September by the method given by Mr. Steele on p. 531, Aug. 15. Two of these are in fine shape now, while No. 3 is weak and has little honey, owing to the fact, probably, that it was in bad shape when treated. They will need a frame or two of honey to go through the winter.

I still have eight or ten colonies which are affected by the disease. Of these three methods tested, Mr. Stuart's appeals to me as the most economical and simplest to use,



FIG. 1.—BANANA - PLANTS AS THEY APPEARED IN W. A. PRYAL'S GARDEN, OAKLAND, CALIFORNIA, TWO YEARS AGO.

provided one runs for extracted honey. I shall try his plan more extensively next summer.

Ashton, Ill.

[We hope you will keep us informed of your further experience with the Stuart treatment next season.—Ed.]

BANANAS AND BEES.

A Tropical Plant Yielding Valuable Fruit and Much Pollen.

BY W. A. PRYAL.

Few indeed are those persons who have not eaten bananas and formed a fondness for them, especially when they have been secured in the right condition for edible purposes; but I am sure not many have seen a banana-plant in blossom. It is a remarkable bloomer. One might be in the furthest part of the globe when a banana-plant at home had just commenced to bloom, and he could finish his sight-seeing, and leisurely proceed homeward, and still be in time to see the flower in all its peculiar glory—possibly being even then some weeks ahead of its final dissolution.

A blooming banana, especially *Musa en-cute*, known as the Abyssinian banana, is

the variety that I am now writing of, and not the fruiting sort, *M. sapientum*, though, I believe, the manner of flowering is about the same in both varieties. I have never seen the latter during its period of inflorescence, though I have seen it bearing fruit.

The past season we had a couple of the ornamental bananas bloom on our place. I had seen them on numerous occasions previously, but never at such close range that I could study them. Before one of our plants had finished blooming I took a tall ladder, and, by means of a rope and long butcher-knife, cut the flower at the bend of its "goose-neck," and lowered it to the ground with the rope. An examination showed its manner of blooming. It is very interesting indeed.

Having made photographs of one of the plants at various stages of its growth, I am enabled to show some of its life-history, as it were. Here I might mention that these plants were a few of a lot raised by the writer's father from seed sown a couple of years before his death, three years ago. Some of them were planted in the garden, where they were allowed to grow undisturbed winter and summer. A few were kept in large pots for decorative purposes. Most years our winters are sufficiently frosty to injure partially or nip the foliage of these bananas, though never enough to do them

permanent injury. Some years they would not be nipped at all; then, sometimes, in our coldest winters they would not be injured, especially when planted in a protected situation, or when encased in a blanket or burlap covering.

Fig. 1 shows our finest specimens as they appeared two years ago, and Fig. 2 shows one of the same plants in July of this year when it had been "blooming" two weeks. The foliage had been pretty severely touched by frost last winter, but that is not the entire reason that the plant has such a woebegone appearance. With this banana, as with the well-known century-plant, when it comes to its period of fruition it seems to withdraw all sustenance from its foliage, and throws its entire life into its flower-stem and blossoms. Every thing about it seems to wither and die except the trunk and the apex of the flower. There is no pyrotechnic display about the blooming of the banana. The tip of the flower-cluster stealthily pushes itself from among the leaves and soon curves downward. A new flower is constantly being pushed from out the center of the cluster. No matter how often you look within the opening, be it now or two months hence, the flower looks just the same; and if you are not a careful observer you will probably imagine that it is the identical flower you last saw. A dozen—yea, a score—might have unfolded and yielded their pollen to the bees in that time. To illustrate, Fig. 3 was taken Oct. 1, some months after Fig. 2, and yet the period of inflorescence had not yet reached its climax.

In order to show one of these flowers in detail I took a long butcher-knife and cut through the flower lengthwise and removed a few of the petals, and bent some others well backward, as pictured in Fig. 4. The flower is *in bloom* where the middle row of anthers or stamens shows. The petals at this stage reflex so as to open up the flower to give light and air to the wonderful floral mechanism; also to invite bees and other pollinizing insects to come and revel in the greatest mass of pollen produced by any single flower in the world. It is no exaggeration, and I have no fear of being cast into the Ananias Club when I state that the pollen in one of these circles or whorls may be gathered up with a teaspoon. I did not measure the amount, but I should judge there would be several spoonfuls. It is mostly of a coarse texture—far heavier in grain than any other pollen I ever saw. Nevertheless, bees pile right into it as they would into a meal-sack, and load up with the dust; but there seems to be some of this pollen-grain that is finer than others. I believe that the coarse grains burst as they reach maturity, and thus provide the fine



FIG. 2.—THE BANANA IN BLOSSOM IN JULY OF THIS YEAR.

fertilizing pollen; but I did not investigate this. By reference to the same figure it will be noticed that the stamens shown where a petal was removed from an unopened flower are large and plump. At this stage, what appears to be a single anther is in reality several—two or three—and they enclose the pistil. When the flower opens they expand or burst, and liberate the pollen as shown in the second or middle row of anthers. I suppose each group of these anthers and pistils makes a complete flower, for it is they that make the fruit. You will notice by observing a cluster of bananas that the fruit is attached to the stem in successive rings or layers. And it is this manner of blooming that so produces the fruit. Wonderful is the banana! But the way it gives forth its nectar is still more wonderful. While the bees may get some of this sweet by climbing into the flower they do not have to do so altogether, for it comes in a constant stream, though not over-copiously, from the apex of the cone, which is always downward, as shown in Fig. 2.

Will it be profitable to plant this banana for bees? No, I hardly think it would. I know I would not think of doing so, though I should surely want a few about the apiary for the ornamental effect they would produce. Where shade is wanted for hives, stands their leaves would be serviceable.

Oakland, Cal.

THE COMMUNITY HIVE.

A Scheme for Working Ten Colonies in One Large Tenement, Separated from each Other by Wire-cloth Division-boards.

BY GEO. W. PHILLIPS.

Dear Mr. Root:—So long a time has passed since my name appeared in your paper I fear most of your readers, and perhaps the editor himself, will have to look over GLEANINGS of five years ago to recall who I am. At any rate, my college and university studies have not lessened my interest in bees. Throughout my seven years of student life I have endeavored to keep at least partially in touch with apicultural progress. More than once I have been honored by requests to address scientific departments upon the more practical aspects of bee-keeping; and, one year excepted, two hives of bees have always shared with me my suite in the dormitory.

Some three years ago I wrote an article for you upon the subject of indoor wintering. Since then I understand you also have tried the method and found it highly successful. Last winter, by keeping my window hive in a very warm room, I managed to pull through a nucleus so weak and impoverished that in any other situation it must have died. I recognize that his method of wintering must, for the present, remain the method of the man of few colonies. Perhaps some time the bee-keeper of large interests will devise a method of bee-house construction by which large apiaries may be wintered indoors at a temperature of 70°. In fact, the longer I handle bees the more inclined I am toward the indoor method. If ever I go to the tropics again to launch once more into the bee-business I shall certainly consider seriously the open shed. I am convinced that the saving in hives would be alone sufficient to cancel the cost of such construction. You have no idea of



FIG. 3.—THE SAME PLANT AS IN FIG. 2, BUT TWO MONTHS LATER, SHOWING THAT THE PERIOD OF BLOOM IS NOT YET OVER.

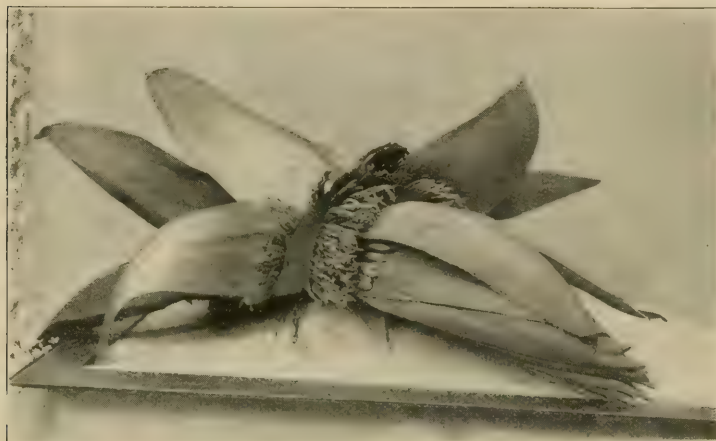


FIG. 4.—BANANA-BLOSSOM DISSECTED TO SHOW THE FORMATION.

how bee-hives act in Jamaica. Your cleated covers, if not abundantly and frequently painted, wrinkle up and crawl off the hives like ground lizards. Only metallic covers, or those that are double-roofed, eliminate the everlasting robber-line. And as to rotting—well, I don't want to seem to exaggerate. Indoors, with first-class results, I have kept a portion of my home apiary in the tropics. Discomforts of rain and sun were eliminated, besides a saving of the weather on the hives; and the same would be true

to a great extent in the North, with the further advantage of being able to work continuously on chilly days, without endangering the brood, and the entire elimination of winter losses.

This summer I have been working out some advanced problems in bee-keeping, and all my work has been done indoors. I am planning to continue my work next season, and then I hope to have a sufficient number of colonies for more exhaustive experiment. I have just put away twelve nuclei for the winter.

I can not concur with your Mr. Pritchard's conclusions concerning queen-cells. Virgins are the only rapid (and consequently economic) method. But I have no time for discussing this at present, only to say that my season's work along this line has been fruitful, and I may find time for some other article in the future. At present I want to tell of what I call the community (or tenement) hive—a device *perhaps* more particularly adapted for use indoors.

This hive I keep on the porch adjoining my study upstairs. The length is normally Langstroth—20 inches; and its width, that of ten ten-frame hives placed side by side. In other words, it permits of ten ten-frame honey-boards and supers being placed on top. This makes a Langstroth hive-body with the capacity of somewhat over 100 frames.

But, to describe more minutely, I may say that the tenement hive is divided transversely into compartments of 16 inches. A clean vertical saw-cut $\frac{3}{8}$ in. deep, and running at right angles to the rabbet on each of the parallel sides, effectively holds a metal division-board, which also, upon occasion, may be easily removed. You have then, side by side, ten ten-frame hives all in one. The division-board I use is made of perforated tin. Next year I shall probably use wire cloth, as this is quite adequate, less expensive, and permits of greater circulation of the community heat and odor. The division-board fits squarely on the bottom of the hive, and reaches to the top so as to prevent the passing of bees from one division to the other.

I am sorry I can not describe in detail the bottom-board of such a hive, for I use no bottom-board. I make the hive-body deep enough, and clamp the structure right down to the floor of my porch. This makes it rigid, and prevents the sides, otherwise unstable, from coming together or wobbling apart. Of course, the same purpose would be attained if a bottom-board were screwed on. Next year I shall make one so. The entrances must be arranged alternately. I use simply a cluster of three auger-holes arranged triangularly in the center of each alternate compartment on each side. Thus, externally, each colony appears back to front with its nearest neighbor. To be plainer, suppose we call our ten hives in order, A, B, C, D, E, F, G, H, I, J, and say the entrances face east and west. Then A, C, E, G, I, would open to the east, and B, D, F, H, J, to the west. The danger of mixing

is thus reduced to a minimum. I have absolutely no trouble—not even with virgins in their nuptial flights.

As to covers, when I worked with you in Medina you used to turn out a perfectly flat cover with metal ends. This would be very good, and abundantly sufficient. Not having such a cover, I use ten ten-frame-super covers, or bee-escape boards. Being indoors, nothing else is required for summer. And, in fact, any ordinary flat cover will supply additional protection when it is necessary. You can then open any compartment and look it through without inconvenience to its neighbors on either side.

The advantages of such a hive are so obvious as hardly to need comment. First, as to cost. There is a great saving in material and labor. I can not tell what the factory price would be; but I made my own hive—did it in a few hours—and I know the relative cost of ten ten-frame hive-bodies.

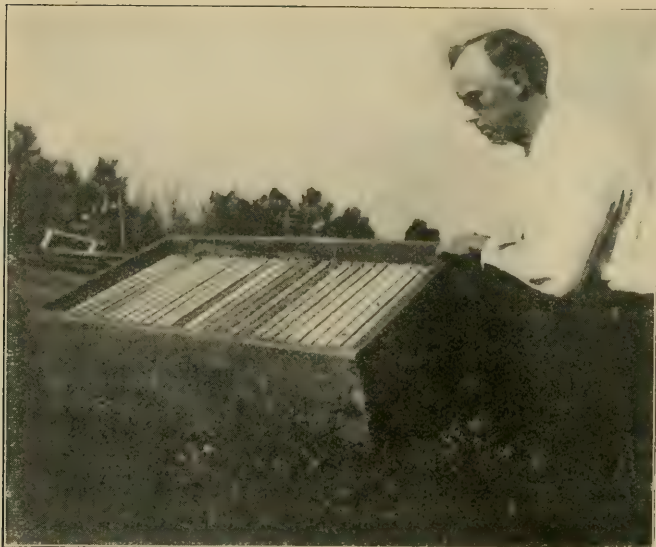
Secondly, as to the utilization of space. Here is the hive of all hives for the man in the city—the great ideal for the porch, the flat roof, or the cramped back yard.

Thirdly, for uniting, equalizing, etc. No fighting—not a dream of such a thing. The community heat and colony odor penetrate and permeate all. The frames are interchangeable, of course. One may ask about robbing. There is not the slightest trouble, and my neighbor's apiary is next door. In fact, so perfect is the socialism of the system that the economy of the single hive seems to prevail. Destitute colonies seem never to starve so long as their neighbors have a drop. From many experiments, I am practically certain of this.

Fourthly, and following closely on the above, is the subject of queen introduction. This, to say the least, is much simplified. Any ordinary queen-breeder knows how much easier it is to introduce a queen from one compartment of a double nucleus to the other compartment, than to introduce such a queen to a foreign colony. In fact, the principle is the same as caging a queen in a hive prior to releasing her. In each case, the common community odor is transmitted through the wire cloth.

Finally, wintering. Need I say any thing here? Is it not sufficiently obvious that each colony is protected by the warmth of its fellows? Why do arctic explorers with Eskimos, dogs, and all, herd together? Read Peary in Hampton's. The inter-communication of heat—that's the idea. My stock of bees is slim this year; but I am purposely wintering on an open porch, and without any protective padding to test the winter value of the community method.

I noticed the other day in an old magazine where Mr. Edison, or some such thinker, advocated, instead of the congested city, the community house, winding like a rural road through the long vistas of the country. The mechanical features and advantages of this inventor's architecture find some parallelism here. One can almost see arising a new style of apicultural architecture in



A RELIC OF THE PAST GENERATION.

This "Long-idea" hive, as it was called, was once considered quite favorably by a number of bee-keepers; but the difficulty in handling it, due to its unwieldy size, limits its use considerably.

which five hundred colonies might thread a single structure—spiral, angular, or what not, according to local mechanical requirements or the artistic temperament of the bee-master.

Wyoming, Ohio.

[Perhaps we should explain that Mr. Geo. W. Phillips was for three or four years our queen-breeder at Medina. It was under his administration of the yard that baby nuclei of the Pratt style were made to work successfully. While our other men were equally successful, they deemed it more practicable to use larger twin nuclei with a very thin division-board between. It was, perhaps, this form of community hive that suggested the idea to Mr. Phillips.

It is our opinion, although we can not just now refer to the place, that this same general scheme has been tried before. If we remember correctly, this kind of tenant scheme will work after a fashion; but we believe it is not practicable to work more than two colonies on such a plan. Among our large circle of readers there are certainly some who will remember of experiments along this line; and if so, we shall be pleased to have them give the results or the reference.

We have worked colonies in pairs separated by wire cloth. Our Mr. Wardell, who operates our Uhrichsville yard, puts an upper story, divided into three compartments each, on top of a strong brood-nest. Wire cloth separates the upper from the lower compartment. In each of these divisions above are placed two frames of bees and brood and a queen-cell or young virgin. The plan works very satisfactorily, because the heat of a powerful colony rises up to the

nuclei above that require a large amount of heat in order that their baby queens may develop properly.

One objection, as we see it, to the community hive, as Mr. Phillips has outlined it, is this:

The stronger clusters will have a tendency to get together on each side of a wire-cloth division-board. This will have a tendency to leave the other smaller clusters high and dry between, we will say, two other double clusters. Unless the brood were pretty generally equalized, some would be much stronger than others. It is in their play-spells that young bees will fly to those entrances where the bees are flying strongest; or, to put the proposition another way, we do not believe it is practicable

to have so many colonies with entrances only 16 inches apart. The scheme has been tried in house-apiaries, and it has never proven very satisfactory.

But it is but fair to state that Mr. Phillips, before he came to this country and engaged to work for us, had run some two to three hundred colonies of his own in Jamaica, his native land, several seasons. He is a bee-keeper of large experience; and while we have our doubts as to the practicability of this scheme we shall be glad to hear of the results a year hence.

Referring to the plan of wintering indoors with an entrance leading to the outside, we may say the plan has not worked very satisfactorily at Medina. We have been trying it for three or four years. A temperature of 70 degrees causes the bees to consume too largely of their stores. This results in a congestion of the intestines, so that large numbers have to take a cleansing flight whether the weather is suitable or not. Most of them in unfavorable weather never return. At all events, it seems to be apparent that a colony wintered on this plan will never be very strong. Nature has designed that bees during winter shall go into a sleep, during which they go into a state of semi-hibernation. In tropical countries, or we will say in our own Southern States, where the bees can fly two or three times a week, they can cleanse themselves properly after a few days of confinement; but a colony kept at the temperature of a living-room throughout the winter where it can not have more than two flights during the winter, can not cleanse itself as it should. The overeating has a tendency to wear out the bees, resulting in premature death.

We do not go so far as to say that this scheme of indoor wintering is not a success. We expect to continue our experiments.—
ED.]

THE OLD LONG-IDEA HIVE.

BY GEO. SHIBER.

In our yard we have several of the "Long-idea" hives. In most cases they are old hives that I bought containing bees, and I made them over to take the L. frame.

The illustration shows the inside of the hive. It is a first-rate summer hive, but not good for winter, as it is, of course, too bungling and heavy to carry into the cellar. In a locality where bees can be safely and profitably wintered outdoors these hives are all right, as one can get booming colonies in them. It is too cold to winter on the summer stands in this locality.

Randolph, N. Y.

A SUBSTITUTE FOR GRAFTING CELLS.

A Tool for Cutting out a Cell Containing a Larva of the Right Age for Queen-rearing.

BY MARK W. MOE.

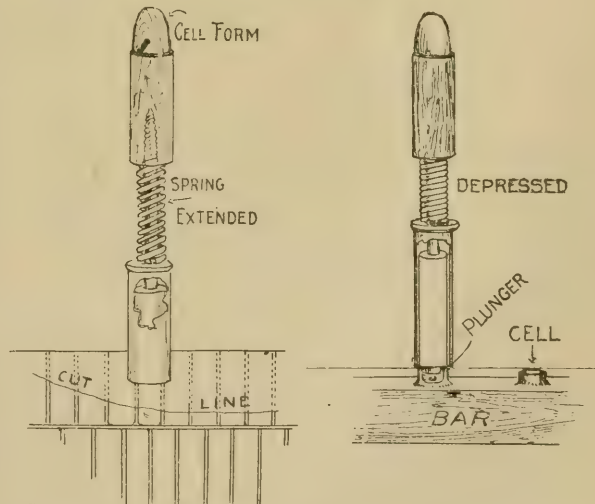
Oliver Foster once said, "Some of us have clumsy fingers, and do not succeed very well in transferring larvæ for queen-rearing." Perhaps I have not quoted him exactly, but his words were to that effect. He went on to state how he cut out bits of comb having just one larva in each piece and then fastened these to a bar with melted wax and rosin. In my own experience, though I have tried repeatedly, I have met with unsatisfactory results whenever I tried to transfer, so that I always went back to the Alley plan of cutting the comb in strips and shaving the cells down close to the middle of one side, and then, after destroying every other larva, fasten such a piece of comb with melted wax and rosin to the bar.

All this led to another situation which I did not like, and that was that I was obliged to cut the cells apart, thus spoiling some of them, and then having cells that were more fragile than the artificial ones. I had to leave the cells attached to each other in the cell-building colonies, no matter how many cells were missing, instead of having each cell readily separable, as are the wooden cell-cups. To sum it all up, I wanted some method by which I could transfer larvæ without disturbing them, and still have all the advantages of artificial cells and wooden cell-cups. At least in my

experience, bees accept the larvæ much better when they are not tampered with by man; and if we can eliminate the transferring of royal jelly we save just that much time and bother. Mr. Will Atchley accomplished this by cutting the comb down with a sharp knife or razor, and transferring with tweezers the cocoons containing the larvæ together with the food which the workers had placed there. Mr. Pridgen used a stick that just fit the inside of a worker-cell, with the end hollowed out so as to avoid touching the larva when transferring. I have had some success by using the latter plan, but it necessitated using old comb, and sometimes even then the cocoons would not separate from the comb in a satisfactory manner.

The larva-transplanter or cell-cutter shown in the illustration will transfer larvæ from tough old black combs, or from partly drawn foundation, or from any condition of combs between these two extremes, without touching or disturbing the larvæ in any way. This means that those of us who have clumsy fingers can use it as well as any one else. The comb which I prefer, however, is a comparatively new one, as I can work more rapidly with it.

By this device we can have all the advantages of the Alley, Atchley, and Pridgen plans combined with those of Doolittle, Root, and Swarthmore as well. There is no necessity for hunting for royal jelly or making a colony queenless several days to obtain it before starting a lot of cells. Other conditions being right, the bees readily accept the larvæ.



Select any larvæ desired, regardless of the age of the comb. No transferring-tools are needed besides this device. If the cut-out cells are to be attached to regular Swarthmore compressed cells the shape of the compressed wax might have to be altered somewhat, but I think the regular shape would

probably be all right. The wooden handle of the device is made the exact shape of my cell-form, and it is just right also for dipping in melted wax to make artificial cell cups, according to Doolittle's way.

To use my device, shave the comb down to within $\frac{1}{8}$ inch of both sides (less than that is better still, say $\frac{3}{16}$ over all), then press the plunger down right over the larva if using old tough comb. If the comb is comparatively new the inside plunger is seldom necessary. Then press the cutter down firmly, twist it slightly as dough is cut with a cooky-cutter, and withdraw it from the comb. Lower the cutter until it rests on the shoulder inside the artificial cell-cup, then press the plunger down gently but firmly, and after it is turned a little it may be withdrawn.

Denver, Col.

[Our Mr. Bain says he has often thought he would like to make some such device as this, and he is prepared to believe that it will be a good thing. The illustration is faulty in that it shows the transferred cell attached to a bar rather than placed in an artificial cell-cup. If a wooden cell were made just the right shape it would hardly seem that any artificial wax cell would be necessary.—ED.]

COMMENTS ON RECENT DISCUSSIONS.

BY J. S. PATTON.

As the editor has asked the readers to give their experience on several different questions I will try to throw a little light on some of them as I view them from this southern location.

SHADE HAS NO EFFECT ON THE SWARMING PROBLEM.

Several years ago I built a bee shelter running east and west on the south side of a house, and I also located some hives on the north side of the house. There was a good deal of shade, and the sun shone only on the hives that were on the south side of the shelter. Most of my colonies are out in the hot sun, and I see no difference in the results. Colonies made as much honey and swarmed as much in the shade as did those in the sun.

COTTON HONEY FINE.

Cotton honey, when it is thoroughly ripened, is about the color of good castor oil, and has a fine flavor. However, we seldom get much of it here, as the bitterweed nearly always blooms at the same time.

SEALED HONEY MAY NOT ALWAYS BE RIPE.

My experience last year was exactly in line with that described by Mr. Doolittle, page 71, Feb. 1. The weather was very dry during our first honey-flow, and the honey was almost ready to extract when first stored. Later, during the second flow we had very wet weather, and the honey was not fit even when it was all sealed.

HONEY-DEW FROM PINES.

Three or four years ago my bees gathered honey-dew from the pines, which was like that described by Dr. Gates, p. 91, Feb. 1. The flavor was very good. I had never seen such honey before, nor have I since, and I have never known bees to be on the pines at any other time.

QUEEN-EXCLUDERS INDISPENSABLE.

A good deal has been said for and against the use of queen-excluders. We could not produce extracted or bulk comb honey here at all if we did not use them, for the queens will fill every comb full of young brood every chance they get.

VARIATION IN QUEENS.

After reading what F. Dundas Todd has to say, p. 152, March 1, and also what Louis H. Scholl says, p. 246, April 15, I will give my experience. I have bought but two tested queens, and they were almost complete failures. Of the untested, one died soon after she began to lay; about two-thirds of them were fine layers. I can not see why anybody should think that he can buy better queens than he can rear at home.

LITTLE HONEY FROM PEAS.

Mr. Boyle Dillard, p. 235, April 1, wants information in regard to pea honey. In this locality bees work on peas to some extent, but I can not see that what they get amounts to very much. Possibly it is because there are not enough peas raised close to the apiary.

GEESSE KEPT IN THE APIARY TO KEEP THE GRASS DOWN.

Some have asked about a way to keep grass out of a bee-yard. I have found that the best thing to do is to keep geese; but it will not do to allow goslings near the bees. Hogs, too, are all right for this purpose.

EARLY DRONES.

On page 272, April 15, Mr. Stock refers to drones which might have wintered over. When I kept bees in box hives, so that there was plenty of drone comb, I frequently saw drones in February or the fore part of March; but I think it was because of the great amount of drone comb in the hives.

ITALIANS SWARM MORE THAN BLACKS.

What Mr. W. C. Mollet says, p. 286, May 1, interested me very much, as did also the article by Dr. Bonney, page 293, May 1, and the discussion on the subject of "The Best Bee," p. 296, May 1, by D. M. MacDonald. When I began working with bees as a little boy, in the 80's, I had the common black bees; but in 1900 I began with the yellow bees. In looking back over my experience with both kinds, I find that the Italians have earned the reputation that Mr. Mollett gives them in regard to swarming. I had a good many colonies of blacks that would not swarm for three or four years, and there was one black colony that did not swarm at all, although I had it for seven or eight years in a box hive. This swarming question is becoming a serious one with me.

Our first honey-flow begins between March 25 and April 15, and this is our swarming time. For the last ten years we have had a good deal of cold, windy, or very wet weather just about the time the bees start to work; and as soon as it gets warm again every colony tries to swarm, and from 60 to 75 per cent do swarm. After this is over the honey is gone and no surplus secured.

I run for extracted honey, and I have tried giving plenty of room, also an upper entrance, as well as an extra-large opening at the bottom by using four blocks as Mr. Ackerman describes on page 320, May 15. None of this does any good. The nearer the bees are to being full-blood Italians, the worse they swarm. They will swarm even when there is not enough honey coming in to permit comb-building. The blacks have never done this. All this convinces me that if any one ever finds a non-swarming bee it will not be an Italian.

On p. 360, June 1, Frank C. Pellett mentions a swarm without a queen. I have had this same experience several times. I explain it in this way: The swarm must have gone off with a virgin queen which was lost in returning from her mating-flight.

Havana, Ala.

A NATIONAL BRAND OF HONEY SUGGESTED.

BY M. E. PRUITT.

If we had a "National" brand for our honey, we as members of the National Association would have a strong shoulder to lean against, and therefore substantial backing. A member would not dare, nor even have the inclination, in fact, to put up something not pure, and brand it with the National brand. On the other hand, no one would question the absolute purity of an article under such brand.

In the second place, more bee-keepers would rally around the National banner so as to be entitled to use the brand and its protection, thereby making the National Bee-keepers' Association that much the stronger and that much wider known, so that there would be more demand for pure honey.

Since the pure food and drug law has been in force, all bogus preparations that did not go out of business have boldly advertised their stuff under various names; and if it pays to advertise trash, why should it not pay us to advertise our pure goods with a brand that is synonymous with strict honesty? Among those benefited by this measure would be the National Association, the bee-keepers as a body and individually, the grocers and the consumers, and only the glucose-manufacturers would suffer.

A UNITED EFFORT TO PUT DOWN THE COMB-HONEY LIE.

Why would it not be a good plan for bee-keepers in one community to get together and agree to keep the following notice, or a

similar one, running continually in the local papers? "\$500 [or some other amount] to any person ingenious enough to produce artificial honey in artificial comb that can not be told from the genuine." The understanding might be that one bee-keeper should pay for the notice for one month, another for the next, and so on until this delusion about manufactured comb honey is entirely obliterated.

Eola, Texas.

[In this connection, note what Wesley Foster says, page 732, Nov. 15. For a number of years the General Manager of the National Association has given to members a label bearing the National seal to use on honey, so that the buyer may at least know that such honey is absolutely pure. If the word "brand" were used, or if the honey were advertised as the "National brand," would it not be a suggestion of manufactured goods? Furthermore, unless such honey were put up by a central packing force at National Association headquarters, say, it would vary considerably in flavor. One "brand" of honey should be the same the country over.

We had begun to think that the comb-honey lie had almost died out; but only recently it appeared again in as bad a form as we have ever seen it, in *Collier's Weekly*. There is no way except to keep on fighting it; but it is certainly discouraging when careless writers in our popular magazines make statements that undo at one stroke the united work of bee-keepers for years.—Ed.]

THE FOUL-BROOD SITUATION IN CALIFORNIA.

How the Law Works, or Fails to Work.

BY J. O. SHEARMAN.

I have talked with bee-keepers in Los Angeles, Riverside, and San Bernardino counties, and they all say that the inspectors do not come near them unless they send for them, and very seldom even then. They mostly explain it by saying, "The board of supervisors appoint men by political preference or favoritism rather than for fitness for the office." Some say that there is a certain amount of money raised each year to pay the inspector, and when that is gone there is no more to pay the inspector, and you can't compel a man to work for nothing and board himself.

Mr. Andrews, a representative bee-keeper of Pomona, and I were talking the matter over one day, and we agreed to call a local meeting of bee-men in that vicinity and see what we could do about it. So a few of us got together and agreed to adjourn it a week, and send word for the foul-brood inspector to meet with us and see what he had to say first. We met again at the house of Mr. Lee, but the inspector did not come, although a few more bee-men did, and took much interest in the question, "How to eradicate

bee-diseases in this valley" or the State for that matter.

Mr. Lee said he had charge of Fletcher's apiaries in this vicinity two years ago, and some of them were rotten with foul brood at that time, and Mr. F. had given them orders to extract all the honey they could from the upper stories of diseased colonies with the rest. Mr. Malone (present) said that he bought all of the Fletcher apiaries last spring, and found some foul brood among them; so he sent for an expert at Elsinore to attend to it. They themselves went over them three times this summer, and believed they had them all cleaned up. They found 75 colonies diseased out of 1200 purchased, but no foul-brood inspector came near.

All present (at this meeting) agreed that the law was inoperative, and that bee-keepers themselves must take it in hand. I advocated stirring up the matter enough to get a new law passed, giving the bee-men the power to appoint one of their own number as inspector. But most of those present said it would not work, as the bee-keepers themselves were apathetic, and would not come to the meetings even if called. Each *big* bee-keeper attends to his own, and lets others alone. It was agreed that the small bee-keepers keep foul-brood going through carelessness. They get a few colonies by catching natural swarms, and then hardly ever look at them except to "rob" them after the honey-flow.

It is often difficult to tell, in this valley, where there *may* be some foul brood, unless one has authority to go into all places. The boys about town often catch a few swarms, and put them in old grocery-boxes, or any old thing to hold them. They sometimes sell them cheap to a bee-keeper; but if not, then they set them in the back yard, or any old place, and so much shrubbery grows here, with the orange limbs hanging to the ground, no inspector or any one else would know there are bees kept there unless told so. These bee men hardly ever watch their bees through swarming time, and many swarms get away. Some swarms are caught; but many more get away. Some go to the hills and some get into the walls of houses or barns. Most of these small bee-keepers pay but little attention to their bees unless they are near where a team has to be driven, and foul brood may lurk in any of those places. For instance, when some bees were moved from a location not far away, some old frames were thrown out, and some were picked up by some boys who used them to hive bees in, and then sold their bees to a bee-keeper, thereby introducing foul brood to his yard.

Pomona, Cal.

[California has what is known as a county foul-brood law, and Colorado has the same. We have already learned that the bee-keepers of Colorado are dissatisfied with their county law, and are now looking for something better, providing for a centralized authority and inspectors for the entire State.

We have known for some time that the California law also was practically inoperative in many sections. Ohio for several years has had a county law, but it was a dead letter. We now have a new State-wide law that makes the State Entomologist chief Foul-brood Inspector, with power to appoint deputies—as many as he may need. As in most States, so also in our own, the Entomologist is appointed by the Ohio Department of Agriculture. This is bi-partisan, and the appointees under that arrangement are not subject to political changes. Under the Ohio law the State Inspector has eight or ten men in the field; and during the six months that the law has been in active operation the inspector has covered half the State. Under the county law absolutely nothing was done during the eight or nine years it was in force.

Both Colorado and California, and other States having county laws, should have a law like that in force in Ohio, Indiana, and some other States. It is not difficult to get such a law on the statute-books, for the law calls for *no direct appropriation*. It simply creates a Division of Bee Inspection under the general Department of Agriculture of the State. It is then up to that Department to see that funds are provided for *all* its different lines of work. The legislature is in the habit of making annual appropriations for the purpose of carrying on that work. Now, if that Department of Agriculture asks for \$500, \$1000, or \$1500 more, the legislature has no objection to increasing the appropriation, because the members of the General Assembly are not personally held responsible for the disbursement of that appropriation. The result is that, under a law such as we have in Ohio and Indiana, the State Entomologist can have \$500 or more if he needs it, provided he can show his superiors that such money is needed to protect certain interests in the State.

We wish to suggest right here and now to the bee-keepers of every State in the Union that does not now have a general State-wide law, that it is none too early for them to begin agitation. The publishers of this journal will furnish the draft of a law prepared by Dr. E. F. Phillips, of the Bureau of Entomology. When such a law is placed on the statute-book we shall not have any more such conditions as are found in California, Colorado, and elsewhere. The great feature of the new Ohio law is that the work of inspection is placed under a division that already has funds, a corps of men, stenographers, office equipment, and a chief who will see to it that the machinery of the State is brought to bear on *every county alike*. It is not necessary that the State Entomologist be a bee-keeper, for it is easy enough to find experts who, under the direction of that official, will carry on the work. In Ohio the regular nursery inspectors so far have done splendid work in foul-brood inspection, and at comparatively little expense, because the same railroad and hotel bills cover both nursery and bee-inspection work.—Ed.]

Heads of Grain

from Different Fields

Spacing Danzenbaker Frames Wider Apart; Glass Hive-covers.

In your answer to X., p. 597, Sept. 15, on spacing closed-end frames, I was surprised that you who have an answer for any thing fell down as you did. All you have to do is to cut your metal spacers in the middle, nail them on the frames, and—there you are; no tilting and no waiting to get them all in before putting in any comb-spacer.

My cover to hive or super I think away ahead of any thing you advertise. It is a pane of glass 14x17, with $\frac{1}{2}$ x $\frac{1}{2}$ rim grooved close to one edge for the glass on top of this $\frac{1}{2}$ piece. Breaking over the joints at the corners is a rim $1\frac{1}{2}$ x $\frac{1}{2}$, nailed to the other, giving a space of $\frac{3}{4}$ in., in addition to hive-space. This arrangement beats the Hill device; and in introducing a caged queen, ample room is provided in which to lay her, and you can see what is going on too. Nine times out of ten, with this view of any hive or super there is no need of opening a hive at all. These glass covers cost less than your boards. A box of glass with 30 panes, delivered, costs \$2.50, or a trifle over 8 cts. per glass. In a box this year there were no broken ones at all.

Woburn, Mass.

E. C. NEWELL.

[Your plan of spacing Danzenbaker frames further apart is excellent; but there is one other thing we did not mention, and which you apparently overlooked; namely, when you space closed-end Danzenbaker frames apart so that the bees can go between them, you will encounter a serious difficulty; and that is, the bees will glue the space back of the frames to the end of the hive. When the closed ends of the frames come in contact, the bees can only reach the crack that separates the frames, but can not get at the space behind the frames. If you will try your plan in a regular Danzenbaker hive, we think you will be disgusted with it after you have used it a couple of seasons. It would work satisfactorily enough for a couple of months, perhaps.

In the same way, propolis would besmear the glass covers so that they would soon be opaque. The great objection to glass is its coldness. It carries away too much of the heat of the cluster to the outside corners and edges of the hive. Glass is a splendid conductor of heat, while wood is one of the very best non-conductors. Aside from that, glass is too fragile for use in the cover of a hive. Try a few of them before you adopt them on a large scale, and we think you will see that they are not very satisfactory.—ED.]

Beginners' Questions.

1. Is there any objection to painting hives with yellow ochre?
2. In double-walled hives, which is considered better—a dead-air space or packing?
3. Will a full colony work as well with a queen-cell as with a laying queen?
4. Which of the following would you advise for one who wishes to produce extracted honey with as little swarming as possible? The Jumbo brood hive, the twelve-frame Langstroth, or the ten-frame Langstroth, and enlarge the brood-chamber with a shallow extracted-super.
5. What is the best way to give a colony run for extracted honey an upper entrance?
6. In supplying a colony with a cell, how long a time should elapse after removing the queen before giving the cell?
7. Is there a double-walled hive with a loose bottom on the market?

Peninsula, O., Oct. 10.

A. C. AMES.

[1. If you never expect to paint with any other paint, yellow ochre will be all right, perhaps; but you could never put any other kind of paint over it, as it is so hard that oil will not penetrate it enough to make ordinary paint hold. Wood primed with yellow ochre is unfit for ordinary painting.

2. We have always considered the double-walled hives in which packing material is used superior to a dead-air-spaced hive, for the reason that it is diffi-

cult to make an air-spaced hive that, after a few years, will not crack, open up at the joints, etc., letting in drafts. Furthermore, packing material serves to hold the heat to some extent, and at certain seasons of the year this is quite an advantage.

3. A colony will not work as well with a queen-cell as with a laying queen. A virgin is better than a cell, but still not as good as a laying queen, so far as the working of the colony is concerned.

4. All things considered, we would recommend the ten-frame Langstroth hive, either the single-walled or double-walled pattern, depending on whether the bees are to be wintered in a cellar or out of doors on their summer stands.

5. The best way to provide an upper entrance is to slide the first super above the brood-chamber forward enough to leave a space between the ends of the brood-chamber and super. If an entrance at the back is not desired, a strip may be nailed over it at that part.

6. There is no reason why you could not place a cell in a hive immediately after destroying the old queen. By the time the young queen emerges the bees will realize their queenlessness enough so that they will be apt to treat the new comer kindly. If the queen has been destroyed several days before, however, no pasteboard need be left over the candy.

7. Some of the manufacturers are now making a double-walled chaff-packed hive with a loose bottom.—ED.]

Wintering Over a Surplus of Extra Queens; is Pollen Needed in the Winter?

1. Is there any possible way that queens might be wintered with a colony of bees? Could not some kind of cage be constructed out of excluding zinc so that the bees might pass in and out as they pleased, and yet the queens would be confined and separated from their rivals?

2. Can drones from laying workers fertilize queens?

3. When bees carry pollen, is it always a sign that a queen is present?

4. What are the objections to beet sugar for winter feed? what are the methods for discriminating?

5. Do bees carry pollen and honey at the same trip?

6. I cured my bees of American foul brood Sept. 1, by the McEvoy plan, taking combs and every thing away from them. I have fed them up for winter; but what will they do without pollen? Can they get enough before winter? and will they be able to live until spring without it? Would you advise artificial pollen?

7. Can the combs upon which the bees have died in the winter from starvation or freezing be used again with safety? If so, how can the bees that are lodged in the cells heads foremost be gotten out?

Florence, Neb., Oct. 11.

A. C. HANSEN.

[1. We do not believe you would find it practical to attempt wintering a surplus of queens in nursery-cages, for, somehow or other, the extra queens die, probably because they are not taken care of by the bees. If you have an ideal cellar, and are willing to spend the time, you will not have much difficulty in wintering surplus queens if you form a lot of nuclei and winter the queens in them. Sometimes the results are unsatisfactory; but if you are careful we think you can succeed.

2. It is a disputed point as to whether drones from laying workers are capable of fertilizing a queen or whether they are the equal of drones reared under the average normal circumstances. Since there is a lack of positive proof, the safest way is not to use such drones. They are usually undersized any way, on account of having been reared in worker-cells.

3. When bees carry pollen it is usually a sign that there is a laying queen, but not always, as occasional bees might bring in pollen; but usually, when a colony is working vigorously bringing in pollen, a queen is present.

4. In this country we can rarely be sure whether the sugar we are feeding is made originally from beets or sugar cane; and as long as we never make any effort to find out, and always have good results, we think that the beet sugar as refined and put on the market in this country is perfectly safe.

5. There is no reason why bees may not carry pollen and honey on the same trip. Whether they do or not, we don't know.

6. It would be better if you could secure combs of pollen from some other colonies, and give to such colonies as have none. The bees will be very slow

about starting brood-rearing unless you do this, or supply artificial pollen. No pollen will be needed during winter.

7. If the bees died merel from starvation or freezing, the combs could be used again with safety; but it is well to make sure that the colonies had not been weakened by some such disease as foul brood, which caused them to succumb to the cold. In cases where you can not be positive, it pays to melt up the comb and substitute full sheets of comb foundation. This is not an expensive process, for the wax you will get will more than pay for the new foundation, although, of course, it will not pay you for your labor of rendering the combs. Ordinarily, you do not need to pay any attention to the dead bees in the cells, as the colonies to which you give the combs will take care of them unless you give too many to some one colony.—ED.]

Labeling Honey to Conform to the National Pure-food Law.

In regard to the pure-food law, will it be necessary to state the source or the particular bloom from which honey is gathered? For instance, I have honey gathered from white clover and aster, and probably a trace of honey-dew. Will it be right for me to ship honey and guarantee it to be all gathered by the bees? Will it be proper to tag each package going to the same firm?

Cornishville, Ky., Oct. 5.

G. W. MORRIS.

[In shipping honey in original packages it is not necessary to label them; but if the original packages or small retail packages are labeled at all, no misstatement should be made. It is not necessary to state the source of the honey; but the producer should be very careful not to label alfalfa honey as basswood, nor buckwheat as heartsease. If the honey is largely from white clover, with a very little from aster and a bare trace of honey-dew, it would be legitimate, we should say, to label the honey as "white clover," for that is practically what it is; but if the aster and the honey-dew both give their own flavor—particularly so if it can be recognized by the ordinary consumer—you had better label it just what it is, "White clover, with a trace of aster and honey-dew." But rather than do that we would recommend putting on simply the words "Pure extracted honey," without mentioning the source. To say any thing about honey-dew at all, when there is only a trace of it (not affecting the flavor), would only prejudice the consumer against it. It must be clearly understood, however, that when there is a sufficient quantity of honey-dew in any honey it must not be sold for pure extracted honey. Unfortunately, it would have to be labeled as "honey-dew honey." It would hardly do to sell this for retail consumption, and we would, therefore, recommend selling it for manufacturing purposes—that is, for the bakery trade. It will not be necessary to tag any package of honey if the package is original and your letter of description concerning the honey specifies exactly what the honey is. For example, if you are selling John Jones & Co. white clover with a little aster in it, and a trace of honey-dew, you had better, in your correspondence, state this just as it is. If your letters do not misrepresent in any particular it will not be necessary for you to tag the packages; but when selling to consumers it is advisable to put on some sort of label.—ED.]

Putting Wire Cloth over the Entrance of Cellared Bees.

Last Saturday, Oct. 29, I took my bees in, as the nights are very frosty, and the winds are cold in the day time. The weight of the hive was 50 lbs., and I think it must contain enough honey to winter them indoors; but I should like to hear from you as to what you think of my way of packing, and if you think I had better return the colony to its summer stand. I have a cement room in my cellar. It was cemented four years ago, so it must be dry. I took the hive in and stood it in a corner, not touching the wall on any side. It has two windows—one at either end—which are darkened. It is under the sitting-room where we have a fire most of the time. I took a super and nailed a burlap in it so that it would be about an inch from the frames. I filled this with dry maple leaves and placed it over the frames. I laid another double thickness of burlap on top, and then nailed a piece of wire screen across the entrance of the hive. I thought they

would be all right; but the bees are never quiet. I have gone down to listen; and, although the room is quite dark, I can hear them at that screen trying to get out. The temperature of the room Monday was 48°, and will be 45 about all winter. Is it right the bees should be so fussy, or had I better put them outdoors and freeze them to sleep? I greatly desire to winter them.

Athol, Mass., Nov. 2.

R. E. BAKER.

[Your manner of putting bees in the cellar is all right with this exception: It will not do to use wire cloth over the entrance. Get that off as soon as you can. The bees must have an opportunity to get out. Then, furthermore, we fear your cellar is not dark enough. The temperature must not go higher than 45° much of the time. If you shut the bees in with wire cloth they will attempt to get out and make a perfect uproar in the hive, when, if the entrance is free, they will crawl out where the atmosphere is cool, and go back again; but the cellar must be kept very dark.

In a climate such as you have in Massachusetts it is a question whether you would not do better to put your bees outdoors. Cellar wintering will not work very well in a mild climate. It must be continuously cold for two or three months. It would be far better for you to have a double-walled hive. If you do not wish to get a new hive you ought to have a winter case or some sort of protection over the single-walled hive outdoors.—ED.]

That Sour Smell Due to Freshly Gathered Goldenrod Honey; the Fine Quality of Goldenrod After it is Ripened.

I notice a communication from D. F. Miller, Wilkingsburg, Pa., p. 670. He seems to be puzzled by a sour smell from his hives. This sour smell is from the goldenrod. We have it every fall when the bees are working on that plant. When the flow ceases he will notice it no more. The goldenrod is one of our main sources for a fall flow. It is very abundant in this vicinity. The bees generally fill one or more supers from this plant. Somebody remarked to me about the rank smell the bees emitted while at work on it. He said they would not care for honey made from a plant that smelled like that. Don't you worry about that. The bees are good enough chemists to take all the smell out and make delicious honey that will make your mouth water a little later. People have asked me to keep goldenrod honey for them in preference to any other. It makes a fine light-amber honey of exquisite flavor and good body.

I have a little joke on one of our near neighbors who noticed this smell when the goldenrod was at its best. She thought it came from the chicken-house, as they keep both bees and chickens. Calling the man one day she told him the chicken-house needed cleaning. He protested, saying it was as clean as he could make it. Not noticing any improvement she went and inspected the chicken-house and found it as clean as a whistle. Continuing to get a whiff of the smell through the open window she searched around the house, through every closet, and around the sink, but could not make out where it came from until she went out near the bees, when she said to herself, "It must come from those bees." When I asked her one day if she ever noticed it she told me her experience, and wanted to know what I thought was the cause of the trouble.

Stamford, Ct., Nov. 4.

E. VANDERWERKIN.

Bees on Shares; a Peculiar Situation.

I write to you for advice. A friend and myself bought five colonies of bees last spring for \$3.00 apiece, each paying half; also each was to do half of the work, but my friend went back on me. He left his half of the work for me to do, principally because he can not handle bees. Now what share should I have if I do all the work next year? The expenses are equally divided. I have my idea of what per cent I should receive; but he, on the other hand, will neither give nor take for the bees, nor does he want to give me a per cent for doing the work.

Toledo, O.

F. R. PETTYS.

[It is the usual rule, when bees are kept on shares, for one party to furnish all the bees, hives, and equipment, and the other furnish all the labor. At the close of the season both share equally in the

honey crop, and both share in the expense of shipping-cases, honey-cans, etc., necessary to hold the crop. We would, therefore, suggest that a fair solution of your difficulty would be for the other party, inasmuch as he is afraid of the bees, to buy your half of the bees and you do all the work, under the usual form of contract. In case the other party will not agree to this, we would advise you to buy his share, in which case you would take the whole crop.—ED.]

Can Bees be Wintered on Candy Alone?

Can bees be wintered on candy alone? Would it do to lay it on top of the frames? Would the hard glassy kind be better, as it contains less moisture—made without stirring? For wintering purposes solely, what do you think of pouring it into the frames (not combs), and hanging them in the hive? St. Mary's, Ont., Nov. 8. J. H. BURNS.

[Bees can be wintered on candy alone. The usual plan is to place cakes of hard candy on top of the frames, then cover the brood-nest with quilts or other warm packing. There is not much difference in the feeding value between hard glassy candy and that which is opaque as the result of stirring. There is less waste with the hard candy, for the reason that no particles rattle down between the frames as in the case of the other candy.]

Years ago our Mr. A. I. Root wintered a good many colonies successfully by pouring hot candy into empty brood-frames. When cold and hard, these frames were inserted, one on each side of a cluster of bees. The results were very satisfactory. Where there are no combs of sealed stores, the giving of candy is the only way to furnish food during midwinter. Syrup has too much of a tendency to excite the bees at the very time when they should be in their winter sleep.—ED.]

Do Bees have Organs that Correspond to Ears in Other Animals? Stingless Bees.

I have read considerable literature on bee culture, and I have yet to see any thing mentioned about the hearing of bees. Their organs of taste, sight, and feeling are conspicuous enough for all. Do bees have microscopic ears of any kind? If so, where can they be found? It has seemed strange that, if bees possess ears, nobody has said any thing about the matter. Yet the little creatures are very sensitive to vibrations, such as a single tap on the side of a hive at night, which will sometimes stop the buzz of the entire colony, and, for a few seconds at least, they become as "still as a mouse," seemingly listening.

Please advise what you consider the right pitch for a hive—how much lower the front should be than the back.

Have there been any further investigations regarding stingless bees since those of W. K. Morrison in 1906? Were any of the species found desirable for or adaptable to the United States?

Canastota, N. Y., Nov. 7.

C. W. WILSON.

[The question of whether bees hear, or whether they receive impressions in some other way, is a mooted one among scientists. Nothing has been found that corresponds to the ears in ordinary animals, although it has been supposed that the antennae may serve the purpose in some way. We know this: Bees are very sensitive to a jar or any vibration; that loud shouting in a bee-cellar will bring back a response from the bees; but as sound always produces sound-waves in the air, the bees may get the effect of the sound by a concussion on their bodies or their antennae.]

The bottom should slope down toward the front at a pitch of about $\frac{1}{2}$ inch to the foot.

There have been no late reports on stingless bees since those referred to by W. K. Morrison in 1906.—ED.]

Propolis-poisoning; a Possible Explanation for the Cause.

The experience of Mr. C. R. Parker, as related under the caption, "A Case of Propolis-poisoning," in GLEANINGS for Oct. 15, interested me not a little. In the summer of 1891 I began my experience in apiculture in a canyon about 15 miles from here. Ere long I was troubled with an eruption on the hands, which, at first, I attributed to contact with poison oak. At times the fingers were greatly swollen, and no satisfactory treatment could be

found. I soon noticed that, whenever I opened a few hives and daubed my fingers with propolis, there was another attack of the poison. This occurred every year. Having often seen bees collecting nectar from the poison oak I concluded that the cause of the ailment was thus explained. Both honey and propolis seemed to transmit the dreaded poison. In localities free from poison oak I noticed no ill effects. I have never met another apiarist afflicted in a like manner.

Banning, Cal., Oct. 23.

S. C. LORD.

[It is entirely possible for propolis to carry poison from any poisonous tree or plant. Our correspondent is probably right in his surmise of the source of the poison. The following suggests a possible remedy.—ED.]

Propolis-poisoning and a Remedy.

On page 668, Oct. 15, you speak of a case of propolis-poisoning. I, too, have had several attacks of the same thing. I had some old diseased combs that had not been used for seven to ten years, and after cleaning the frames of propolis I have contracted the disease. My hands, wrists, and face would itch and burn the same as C. R. Parker tells about; and after trying doctors and different remedies I found that sweet spirits of niter would kill the poison in two or three applications, and leave the skin in perfect order. Just bathe the parts a few times. It is very cooling, and is the best remedy for poison ivy also.

Tacoma, Wash.

H. W. PALLIES.

Shall we Leave the Honey in the Supers on All Winter?

About what time should the honey in the supers be taken off? I removed all of the honey in them some six or seven weeks ago, and some of the colonies have about filled them up again, while others seem to be a little weak. What would be the results should I leave the honey on these last-named hives for winter feed?

Goodland, Ind., Oct. 31.

M. L. HUMSTON.

[We would take off all honey from the hives in the upper stories or supers. When doing so, be sure there are stores enough in the brood-nest below. There should be not less than 25 lbs. for outdoor wintering, and 15 lbs. for indoor wintering. It would, perhaps, do no harm to leave the honey and the supers on all winter; but we would advise taking it off provided you have enough in the brood-nest. If you have any weak colonies we would advise you to unite them with some stronger stock. For particulars regarding this, see p. 644 of our issue for Oct. 15.—ED.]

Not 2000 Tons of Sugar, but 2000 Tons of Beets.

Mr. Root:—Answering the letter of inquiry from your proof-reader, I will say that what I meant when I said 2000 tons per day was 2000 tons of beets used; but even that is a little more than the average used. The superintendent tells me this morning that the average output of the factory for the sugar campaign (which is from two to four months) is 5000 sacks every 24 hours, or 250 tons per day of 24 hours; the yearly output is from 35 to 40 million pounds.

Colorado has twelve sugar-factories. Several of them have only half the capacity of this one; but you can see that she easily stands first in the production of beet sugar. The sugar content of the beets here is about 16 per cent.

Longmont, Colo., Nov. 4.

M. A. GILL.

Langstroth versus Some Other Frame.

Please tell me which frame Alexander used and which one does Doolittle now use? What frame would you recommend for this locality?

Loudonville, N. Y., Nov. 4. J. A. NORRIS.

[Mr. G. M. Doolittle formerly used the Gallup frame, $11\frac{1}{2} \times 11\frac{1}{2}$ outside measure; but he has since changed to the Langstroth, if we are correct. Mr. E. W. Alexander used a frame slightly deeper and a little shorter than the Langstroth; but he said to the writer once that, if he were to start again, he would adopt the regular standard Langstroth size. Practically all of the large producers in the country are using the Langstroth frame.—ED.]

What to Do when You are Not Sure that a Colony has a Queen; Uniting; Wintering Indoors or Outdoors,

I am a beginner in bee culture, and have had several puzzling experiences, and so I write for advice.

1. One colony which did well early in the season was found in August with no brood except drone brood, and the bees carried the larvæ out as soon as they hatched. This drone brood was in the center of the combs, and in cells previously occupied by worker brood. I began liberal feeding, without any result except that the bees allowed the drones to live. When first discovered, the colony had a number of very large queen-cells, rich in royal jelly, but without any eggs. I never could find the queen. I put the hive over another colony, with newspapers between, and moved it off again in a week, and did that a second time. By so doing I so reduced the colony that only a mere handful remained, and robbers finished them one day. Please tell me the trouble, and what I should have done. Worker bees do not lay in every cell, do they? I tried giving them a frame of young brood and eggs, but no queen-cells were started.

2. Another colony with a young queen was found with several sealed queen-cells about the middle of September, and no other brood, and I could find no queen. I gave them some of that drone brood. They allowed the drones to live. After a week I looked, and the queen-cells seemed to have hatched, but I could not find any queens or drones. I had fed sugar syrup in the mean time. The colony is strong in bees. What shall I do? I have been afraid to unite for fear there might be virgin queens which would kill the queens of another colony.

3. A colony having a very fine prolific three-year-old queen has to-day a sealed queen-cell, sealed worker brood, young larvæ, and eggs; but I can not find the queen. This colony has made no previous attempt to requeen. Please tell me what to do.

4. What is the smallest colony safe for wintering in a cellar?

5. What kind of arrangement or cover is best for bees wintered in a cellar?

6. Would you consider it safe to attempt to winter No. 2 as it is?

7. Should I ascertain for a certainty whether or not each colony has a queen before putting them in the center?

Richland Center, Wis., Oct. 13. SUBSCRIBER.

[1. We should judge that this colony had a fertile worker. The fact that you could find no queen of any sort would lead us to believe that the old one must have died, and that the colony, failing to raise a regular queen in her place, degenerated into one of fertile workers. Of course, the bees would save the drones after you began feeding. We usually recommend giving to a fertile-worker colony a good ripe queen-cell. If they destroy that, give them another. Giving a frame or two of good brood will impart new life and blood to the discouraged survivors; and if you give a ripe queen-cell at the same time, you will usually cure the trouble.

2. This looks as if the colony lost its queen, and the bees began rearing cells from the eggs or young larvæ that were left. After one of the virgins hatched she would immediately or very soon proceed to destroy the other cells. She might have been lost in a mating-trip after killing off all her possible rivals, and left the colony hopelessly queenless. However, sometimes it is not easy to find a virgin five or six days old. If you were to look again you might find a queen; but in late fall she might not lay, or until next spring. In uniting, one will usually have a surplus of queens; and the thing to do is to put some weak colony that has a queen with a strong one that is possibly queenless. If the stronger one has a queen it will be a question of the survival of the fittest between the two queens, for there will be a royal battle ending in the destruction of one or the other. We would, therefore, advise you to unite this colony to another one having a queen. If one of them is queenless, or if both have a queen, the matter will take care of itself in either case. Proceeding on this policy it is not necessary to hunt either queen unless there is a choice between them.

3. This colony is a good deal like the one referred to in No. 2. The old queen possibly failed or died. If the young virgin by this time has not begun to lay, or did not lay this fall, unite her colony with a stronger one that surely has a queen.

4. This depends on localities. In your climate we would not attempt to winter outdoors less than eight frames pretty well covered with bees; and even then it would be better to winter indoors. If you have a dry cellar with a uniform temperature, capable of proper ventilation at times, you could winter four, five, and six frame colonies.

5. The answer to this question depends upon the cellar. In indoor wintering it does not make so much difference what sort of cover is used. Many use just an ordinary quilt; others use the summer cover, which the bees seal down. In the latter case the entrance should be full width at least, and, if possible, it would be better if the hive were raised up at the front so as to leave a space of about two inches by the full width of the hive.

6. We would not attempt to winter No. 2 (nor No. 3, for that matter) as they are. Better unite them with other bees that have a queen.

7. It is wise to see that every colony is supplied with a queen before it goes into winter quarters. As a general thing the queenless colonies are the first to die in winter or in the spring. The chances are far better, in other words, if every colony has a good queen.—ED.]

Location of Bees in a Fruit-orchard; Mortality of Bees Near a Body of Water, etc.

1. Would you advise me to put my 20 colonies of bees in one place together, rather than distribute them over the whole orchard? I am manager of a fruit-orchard.

2. Is it a great disadvantage that my apiary is located near the Zuider Zee (Southern Sea)? The distance between the sea and the hives is about 800 yards from the east side, and 500 yards from the south side; but the ground between the sea and the apiary is covered with fruit-trees, and a kind of rape seed that yields much honey for about three weeks before the main honey-flow.

3. Would you advise me to build a honey-house near my bee-yard?

4. About fixtures, is it advisable to buy a power extracting-outfit for an apiary of forty colonies? Would it pay? P. BALK.

Oosterleek by Hoorn, Netherlands.

[1. It will not make very much difference whether you scatter the colonies over the whole apiary or put them in one spot 6 or 8 feet apart.

2. We do not believe that the proximity of your bees to the sea can have any very serious effect. While it is true that some of them might be lost in flying across the water, yet there are conditions like this all over the United States, and in such localities we do not believe the mortality will amount to so very much.

3. If you need a bee-house we would advise you to put it in the center of your apiary, especially if you expect to do your extracting in it. It should be as near the center as possible in order to save steps.

4. For a forty-colony apiary you would not need any power extractor. Such an outfit is not needed except where there are two or three hundred colonies or more. A two-frame hand-power extractor would handle such a yard very nicely.—ED.]

Propolis Wanted for Varnish.

Can you supply propolis free from beeswax? If so, at what price? I am anxious to make use of it for a special purpose. If you are not able to supply it, will you kindly say where it can be obtained?

I have read somewhere that, in the Middle Ages, the woodware in household use in Northern Italy was usually varnished with propolis; and it was claimed that certain special and unusual virtues were attached to it. If you know where I can obtain any information on this head I should esteem it very much if you would let me know.

Point Loma, Cal.

C. WOODHERD.

[If there were a sufficient demand for propolis we are sure it could be obtained; but we fear, however, it would be too high in price to compete against other natural gums. If there were a sufficient demand for it, and the price warranted, we should soon be able to gather quite a quantity. But we do not believe that any honey-producer would be warranted in saving it, or trying to scrape it from frames and hives, unless he were paid at least \$5.00 per lb.—ED.]

Our Homes

By A. I. Root

Train up a child in the way he should go, and when he is old he will not depart from it.—PROV. 22:6.

Thou shalt teach these words diligently unto thy children, and shalt talk of them when thou sittest in thy house, and when thou walkest by the way, and when thou liest down and when thou risest up.—DEUT. 6:7.

A few days ago I met an old friend—one who started in with bees about the time I did, some forty years ago. He and I have been quite intimate for many years, but I had not seen him for some time. Just a few days ago I met him here in our apiary. By the way, I think I had quite a little to do with his *getting married* years ago. He is quite deaf, and rather backward about getting acquainted; but I urged him, as usual, not only to keep bees, but to have a wife and some children. When I saw this bright little boy he was leading by the hand I put out my hand to him and remarked, "And this is your boy, is it, Mr. D.?"

"Oh, no! he is my *grandchild*."

And this reminded me once more of how the years rush by as we get along in the 70's, and we almost fail to notice it. By the way, when I first became acquainted with Mr. D. he was skeptically inclined, and he and I had some long talks in regard to the matter. Well, I think he has got past the skeptical age, for I have been informed that his good wife is quite a prominent worker in the W. C. T. U. in their locality. Among other things I said:

"I suppose you are still a bee-keeper, Mr. D.?"

"Oh, yes! and I had a splendid crop of honey last season. I shall keep bees as long as I live."

"And are you still reading my Home talks in GLEANINGS?"

"Why, Mr. Root, of late I forget every thing I read so quickly that it does not seem to be of any use for me to try to read much if any thing lately, and on that account I have not had GLEANINGS for some little time."

At the above we both laughed, and I was just wondering how many other people, like my good frank friend D., have been doing the same thing while getting along toward 70. I suppose, if we put it short, he meant that every thing nowadays "goes in one ear and out the other."

Well, my story this morning, or at least a part of it, is to illustrate this very point. A few days ago our general manager, Mr. Calvert, said he was going away for about two weeks to attend the National Council of Congregational Churches in conjunction with the annual meeting of the missionary societies. Well, before he started he said:

"Father, would you like to teach my Sunday-school class during the two Sundays I shall be away?"

I replied at once that I should be very glad to take the class, for I enjoy teaching (especially among people where I am acquainted) better than any thing else, and there the matter ended.

After making the promise I *forgot all about it*; and when the first Sunday came I went and sat down in the Men's Brotherhood class, in the charge of our pastor, as honest and innocent as could be. When the next Sunday came, another son-in-law, Mr. L. W. Boyden, came and said, "Father, I shall have to be away to-morrow; and wouldn't you like to take my class of boys? They are very good boys, and well behaved, except Johnnie Smith, who is too wide awake to every thing that is going on to stick to business very much, even during the brief hour of Sunday-school."

I replied as before that I would really enjoy teaching his class; and, so far as Johnnie Smith was concerned, I said he was a particular friend of mine, and I was sure I could keep him within bounds. And then, as before, I *entirely forgot* all about it.

After the preaching service I took Mrs. Root down home in my electric automobile, and was just starting back to the Brotherhood meeting as usual, entirely forgetting that I had promised to teach *two* different classes on that bright Sunday. Just as I was starting back, however, Huber called me across the way and said something as follows:

"Father, Johnnie Smith was running your electric automobile all over town during preaching service."

I stopped; in fact, I was almost stunned to think that any boy should take my automobile without leave, and especially if he ran it around town during preaching service. And then I began to say to myself, "Johnnie Smith! Johnnie Smith! What was it I heard about Johnnie Smith not long ago?" And then I said to myself, "Why, now I do recall that I was to teach Mr. Boyden's class;" and, looking at my watch, I said, "Why, that class of boys, *Johnnie Smith* among them, are even now in their class waiting for their teacher."

I can not remember that my little prayer, "Lord, help," welled up within my heart, but it *ought* to have done so. I hurried back, took the class, and had a very pleasant time indeed with the boys. Johnnie Smith was especially attentive, and showed that he understood his lesson, and he was really a *model* Sunday-school boy. In closing the lesson I said something like this:

"Boys, is it possible that any one of you, with your bright and intelligent faces and neat tidy appearance, will ever 'go to the bad'? Will any one of *you* ever be led so far astray as to commit *crime*, get into *prison*, and, may be, end in *suicide*? God forbid."

They all looked me full in the face when I uttered these words, and I felt in my heart the blessings of the Holy Spirit as I bade them good by. Let me digress a little right here.

When I first heard the boys had been using my automobile without permission I said they ought to be *put in jail* if nothing else would mend matters in our town. But teaching that class, especially the closing words, had softened my heart. I managed to have Johnnie Smith wait a little after the others had gone, without anybody noticing it; and then the Holy Spirit began teaching *me* some lessons. It said something like this: First, Johnnie Smith presumed, somewhat, on being so well acquainted with me that I would not make any serious fuss, even if I found it out. Then it added that automobiles are now a craze with almost everybody. The boys especially are full of wonder and curiosity in regard to these wonderful machines. This was evident from the fact that Johnnie had managed to learn in *some way* just how to move the levers and guide it; and by the time I was ready to question him and remind him that it was not only a violation of law, but dangerous business in many ways, my heart was softened toward him and all other growing boys. I soon found, however, that I still needed my little prayer, "Lord, help," for Johnnie excused himself by saying *he* did not run it. It was the other boy, Jimmie Brown, who was in the machine with him. Remembering that Jimmie Brown was working nights and mornings in our factory, and was often around the automobiles, I readily accepted this explanation, especially as he had frankly admitted that he was very much in the wrong in getting into the automobile at all.

The next day I met Jimmie Brown, and gently paved the way, but was astounded when he told me that Johnnie Smith did *all* the running. He did not know how, and could not have run it if he had tried. I thought at this crisis that I had better give notice to the parents of *both* the boys and let *them* get at the truth of the matter.

Now, while I admit it is a great temptation for boys to meddle with automobiles I am sure it is something that ought to be attended to. During almost every church service we hear horns tooted and the bells ringing on the various automobiles that bring people to church. I suppose the boys do not realize the mischief they may do by moving switches and meddling with the complicated and delicate if not dangerous machinery connected with the automobile. I hope the parents whose eyes meet these words will excuse me if I suggest to them that they are making a serious mistake by bringing up even young boys so that they will not have proper respect for the property of others, especially if such property is in the form of an automobile. Some boys are wonderfully inquisitive, I am well aware. And this spirit of wanting to know about things is a good and proper one. Do not scold such a boy and nag him, but insist, *line upon line, and precept upon precept*, that he *must* refrain from meddling with the property of others. Excuse me for saying it; but *our* own children, who have been

out in the world, have never, one of them, taken any such liberty with property belonging to others. "Thou shalt teach these words diligently unto thy children," etc.

The things I have mentioned are, perhaps, trifling in themselves; but I am told that this meddling with automobiles is a serious matter all over our land. Just after the event I have mentioned, one of my grandsons, who is quite an expert with automobiles, took a machine that cost over a thousand dollars, to Oberlin, where he is attending school. He kept it over night in the barn of a relative. Some time in the night some young men (we do not know whether they were students or not) took the machine out of the barn (without the knowledge or permission of the owner), ran it forty miles by the speedometer, and returned it to the neighborhood of the barn so much disabled that it cost between forty and fifty dollars to have it repaired. When Howard placed his machine in the barn the night before, he was aware that something was wrong with it, and planned to get up by daylight to remedy the trouble. In this condition it was abstracted and run forty miles. Our attorney informs me that a recent law imposes a fine of \$200 or imprisonment, or both, for taking an automobile without the permission of the owner. Now, the above is bad enough; but investigation proves that automobiles have been taken without leave something like a dozen times during the past few months. On one occasion a physician, after having a hurried call to see a patient, found his machine missing, without any knowledge of where it went nor who took it. I hardly need remind our readers that Oberlin, Ohio, has for many years had a reputation for being a model college town. This reputation not only extends throughout Ohio, but over the greater part of the United States. In view of this I do think the college as well as the town authorities should take the matter in hand and find out whether this work is students' pranks or something belonging to somebody who has no connection with that justly celebrated school. I have advised offering a reward, and setting detectives at work; but I am informed that nothing is being done, because the boys brought the machine back—at least into the *neighborhood* of where they found it. Now let me digress again a little.

Down in our Florida home, before I had my little automobile there I fixed up a nice little keg so that my neighbors could reach into it and deposit mail or get letters when going to and from the postoffice. In just a few days my barrel was broken down. Then I nailed it up stronger with clinch nails; but it was broken down again and again. I said to Mr. Rood that there must be some very bad boys in that neighborhood who kept smashing my mail-box. He did not agree with me, however. He said he could not think there were any boys in that vicinity who had any spite against *me* (a new comer), or would do such a thing. I told

him I had heard them throwing stones at the mail-box after I was in bed nights. Once I got up and went out, but saw nothing but some innocent, harmless-looking cows chewing their cuds by the roadside. Finally, when I was getting into a bad frame of mind about it, I went out one day and saw a cow *scratching her back* under my mail-box. Right back of her were a dozen other cows waiting for an opportunity to scratch *their* backs. The faithful bovines evidently imagined that I had rigged up this structure especially for their benefit. I know *they* felt thankful to me for the pains I had taken, even if I *did not* sympathize with them. I felt so guilty I told the story in Sunday-school in order that I might publicly beg pardon of the boys for my uncharitable thought toward them. I think I have before mentioned that, on the street that runs past our house, with dwellings on both sides for about a mile, there is not a man or boy who uses tobacco in any way.

Now, if friend Graves will excuse me again for writing up Florida with "too much of a rosy tint," I shall have to close this Home paper with something that is not quite so complimentary to the boys. After I had begged their pardon I felt so kindly toward them that I frequently invited them to get in and ride when I carried my eggs to market every evening. Pretty soon I had boys piling on behind until my little automobile could hardly move the load. When I began remonstrating they got a fashion of hopping off till my back was turned, and then piling on again; and the more I remonstrated the worse it became; and the more I scolded, the more fun it was for them. Then I had to appeal to the marshal; but, notwithstanding this appeal, one night when we had a temperance meeting in the Methodist church my automobile was taken by a crowd of boys and pushed over into the park, where I had some trouble in finding it, especially as they opened the lamps and put out the lights. This act was a little more flagrant, for, fearing something of the kind, I had placed my machine right close to the door of the church in the full blaze of the light that shone through it from the doorway. Now, friends, who is to blame for taking such liberties? I myself was to blame for being more familiar with the boys than was wise under the circumstances.*

When I was in my teens I once taught school. The pupils were diligent in their studies, and I enjoyed their work; but I made a mistake in not preserving my proper dignity; and before the school was out I realized in a way that I shall remember, perhaps, all my life, the importance of maintaining a proper degree of dignity and insisting on the amount of respect due every teacher. Toward the close of the term some of the oldest and most presuming of the pupils thought it would be a nice trick to put me outdoors as they had some of my

predecessors; but they did not do it, and I was engaged to teach the school a month longer than the usual term, because I *finally* succeeded in making the hoodlum element in that school *toe the mark*.

Now, I hope, dear friends, this Home paper may be a reminder of the importance of following the sense of both of the texts at the head of this talk; and especially of the importance of starting children right, early in life. God knows there are accidents and deaths enough already from the improper use of automobiles, one of God's most precious gifts. Before we start in with the flying-machines I feel that it is of the utmost importance that all who are to handle them should have careful training; and I wish that the word "careful" might also include *prayerful* training.

THE RICH GROWING RICHER, AND—

Mr. A. I. Root.—Excuse me for saying your criticism of the Columbus trouble seems to me rather severe. I hope you do not condemn the strikers as a whole. Conductors and motormen are not much given to intoxicating drink; still, their condition is most unfortunate. They make an attempt to improve their conditions by asking for a better reward for their labor. The attempt was an entire failure, and now the condition of themselves and their families is worse than ever. How such matters can be peaceably arranged is a question, so far as I know, that is yet unanswered.

Years ago an employee giving good and faithful service was voluntarily rewarded, but not so in these days. In my twenty years experience in factories and shops of Cincinnati I have raised my wages from five to twenty dollars a week. Every cent was got, not by asking, but by demanding; and I am making the effort of my life by getting out in the country, closer to old Mother Nature, and cutting loose from the whole wage system entirely. Those not in the struggles of the wage earner and striker have reasons to thank the Lord, for the question is unsettled and uncertain. One thing we are fully aware of is that the rich are getting richer and more powerful. Every thing seems to be in their favor, and—why continue?

Cincinnati, O., Oct. 2.

A. W. MARTIN.

My good friend, we are glad to hear something on the side of the wage-earners on this question, and I am rather glad you did not finish your last sentence. Perhaps it is true that the rich *are* growing richer; but let us call a halt right here before assuming that the poor are growing poorer. And recollect that here in our United States of America most of our rich men started as wage-earners, and many of them from very humble positions; and if you look about you I think you will admit that there are hundreds and thousands of wage-earners who are climbing up all the while into being men of capital; and not only that, they are becoming men of influence. The solution of all our troubles is, without question, a more thorough spreading of the doctrines of our Lord and Master: "for there is no other name given among men whereby we must be saved."

Just a word about not getting a raise unless we demand it. As you may know, I have had years of experience in this matter. Pleasant relations between employer and employees will make it easy to arrange for a raise in wages without the use of that hard word "demand." I am not *now* so

*The boys who did this were not of the class that live on our particular street, and who are always on hand at Sunday-school and Endeavor meetings.

well acquainted with our helpers, as I used to be when bearing the burdens of our business, but then it was a common thing for a boy to say, "Mr. Root, don't you think I can earn more than ten cents an hour?" In fact, I used to be glad to hear a boy address me in this way. I felt like shaking hands with him and talking the matter up in a friendly way. I would often say, "Let us see, John, are you always on hand when the whistle blows?"

A reference to the time-clerk was very likely to reveal the fact that John was often tardy when he was needed urgently; and in a dozen different ways the employer can suggest to his help things that would enable him to get a raise; and where such matters can be arranged in a friendly way, the employer standing by the side of his helpers, and treating them as a friend, a neighbor, and an equal, such things would almost make a heaven here on earth. And that is exactly the way the dear Savior tried to teach us to live together and to work together. I am glad to know, dear brother, that you have been emancipated, and have gone out into the country. Now I am longing to have you say, as a dear brother says in another column, that you have also "got over on God's side."

Temperance

VOTING FOR PROHIBITION LAWS, AND EXPECTING WHISKY MEN TO ENFORCE SUCH LAWS.

Mr. A. I. Root:—"Don't you think you would be more 'helpful and interesting' if you printed less bosh, such as voting for a prohibition law and at the same time for whiskey men and parties to enforce it, as they did in Newark, in *your* State, and give us occasionally some 'straight goods,' like Mr. Chafin's speech in the *National Prohibitionist* for Oct. 6? How many *real* enemies of the liquor traffic hold office in Washington, D. C., New York, and Ohio?"

Newport, N. Y., Oct. 10.

A. L. HINES.

My good friend, I do not know but you are hitting the nail on the head, or coming pretty near it. It is a lamentable fact that, after the Anti-saloon League or any or all temperance organizations have secured some good and righteous laws, it happens many times that the enforcement of such laws is in the hands of men not in sympathy with them. It is very unfortunate, I confess; but I want to assure you that the Anti-saloon League is doing every thing in its power to get better men into office. We are ready to vote for them and work for them, no matter where they are found; and if the temperance forces could be united I think there is no question but that we could readily put good honest temperance men into office. I repeat, it is *exceedingly* unfortunate that all temperance voters can not unite in voting for good men nominated by the Prohibition party, and it is also *exceedingly* unfortunate that it seems impossible to get Prohibitionists to unite for the good

men that the Anti-saloon League would like to put into office. And there is still another trouble: We have many times succeeded in putting men into office that we *thought* would work for temperance; but we found out many times, after it was too late, that the powers of darkness were too great against us, for they turned out *wet*. It seems to me that we ought to be careful, each and all of us, to work more for men who love God and his word, and in that way depend on *him* to give us the victory as he did in olden times. I fear we are forgetting that one man, with God on his side, is often of more avail than a whole regiment, to win in a moral conflict like this. See the following from Wilbur F. Crafts:

"WET" MAYORS FOR "DRY" CITIES.

The Superintendent of the Reform Bureau, in the spring of 1910, spoke in 21 "dry" towns, and 20 of them had elected "wet" mayors. They had decreed that wolves should leave the flock and set a pack of wolves to execute the order. This political idiosyncrasy is partly due to allowing national politics in city elections, dividing on the tariff when toughs should be the issue. When Riverside, California, for once returned to its "wallowing in the mire" of license, a David Harum of the town said: "Four (it's did it) the gamblers, the greasers, the saloots, and some of the good." These "good for nothings" were led into such company by the device of national politics. Moralists may thank God for insurgeny, even though it is mostly a financial revolt, because it is breaking party chains. Law enforcement should be the supreme local issue.—*20th Century Quarterly*, Sept. 21, 1910.

WHAT SHALL IT BE—MORE STATE PRISONS, AND BIGGER ONES, OR FEWER SALOONS?

From the Springfield (Mass.) *Republican* we quote the following:

With three State prisons New York is planning for a fourth, as 4320 convicts occupy 3600 cells, with 621 out on parole. *The increase in the prison population is rapid, for it is now 961 greater than it was two years ago.* And this increase in the number of prisoners is felt in other States also.

If York State were only a sample of the rest of the United States, it would be a terribly sad thing indeed. But I happen to know that less, perhaps, is being done in New York in the way of prohibition and local option than in almost any other State in the Union. Pennsylvania may be an exception. See the wet-and-dry maps that are being exhibited now in our temperance periodicals. Ohio has been talking about a new and larger penitentiary, out in the country. If we succeed in getting State-wide prohibition for the whole State of Ohio (and with God's help we are going to do it) we shall find our present penitentiary large enough. I do not mean to say it is *good* enough; but with the reduced number of convicts, there will be an excellent opportunity for improving sanitary conditions. Once more, shall the United States continue building more and larger penitentiaries, and, to be in keeping with such a course, also continue building new, *larger*, and *finer* saloons to keep the penitentiaries, insane-asylums, and infirmaries going flu blast?

Gleanings in Bee Culture

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Editorial

As usual, our index for the current year will be inserted in the Jan. 1st issue. Those whose subscriptions expire with this number can have a copy of the index by making request on a postal.

METCALFE'S METHOD OF EXTRACTING.

We would call attention to the very interesting series of moving pictures by O. B. Metcalfe, showing the method he employs for taking off his honey. This will be interesting as well as valuable to the beginner and the veteran. Right here we wish to draw attention to two statements of Mr. Metcalfe: 1, that it is not necessary to brush or dislodge *all* the bees from the combs; 2, taking all the combs off at one operation and extracting them after they are all off the hive.

THE NEW OFFICERS OF THE NATIONAL BEE-KEEPERS' ASSOCIATION.

Word has just been received from General Manager N. E. France, of the National Bee-keepers' Association, that the officers elected for the coming year are as follows:

President, Geo. W. York, Chicago, Ill.
Vice-president, W. D. Wright, Altamont, N. Y.
Secretary, E. B. Tyrrell, Detroit, Mich.
General Manager, N. E. France, Platteville, Wis.
Directors, 1914.—J. A. Stone, Springfield, Ill.
O. L. Hershisser, Kenmore, N. Y.
H. A. Surface, Harrisburg, Pa.

We believe that all the above are strong men who will make good officers for the Association; but we feel that the bee-keepers should be especially congratulated in their choice of secretary, in Mr. E. B. Tyrrell. We happen to know that, in his work as secretary of the State Michigan Bee-keepers' Association, Mr. Tyrrell has distinguished himself in more ways than one, and we are sure that the National, headed by this list of officers, and with such a secretary, will have one of the best years it has ever known.

HONEY-COOKING RECIPES.

OCCASIONALLY some one mentions a splendid recipe for making cake, cookies, candy, etc., in which honey is used instead of cheap syrups or molasses. In the A B C and X Y Z of Bee Culture there is a good collection of honey-cooking recipes, but we are sure that there are many more in use

that are not generally known. As we are firm believers in the use of honey in cooking we wish to get together a number of new recipes that have not been published heretofore. Accordingly, to any one who will send us something new, which we can use, we will extend his subscription to GLEANINGS one year; or we will send postpaid a copy of "How to Keep Bees," by Anna B. Comstock, "The Townsend Bee-book," "Alexander's Writings on Practical Bee Culture," or "How to Keep Well and Live Long," by T. B. Terry.

Please let no one get the idea that honey may be used indiscriminately in the place of molasses or sugar, for instance. Sometimes a smaller or larger amount of honey must be used, and occasionally both honey and sugar give better results than either one alone. Some recipes specifying honey result in failure because they have not been tested sufficiently to fix the right proportion of the different ingredients. We wish only those which have been tried and proven.

Honey is already being used with gratifying results in canning and preserving fruit, making all kinds of candy, sweetening cakes and cookies, baking bread, etc., and the general public ought to know that it is far superior to molasses and glucose preparations.

OUR ANTIQUATED METHODS OF SHIPPING COMB HONEY, AGAIN.

THE more we think of the unscientific way in which comb honey has been shipped, the more we are surprised that the method has been allowed to go on these many years. Comb honey is an exceedingly fragile commodity, especially when the weather becomes rather cold; and yet bee-keepers for the last thirty years have been shipping it in boxes or cases, without any cushion to absorb the shock or jar sustained by the delicate combs. It has been only within the last year or so that we are beginning to exercise common sense by using corrugated paper in the bottom of the cases. We ought, in fact, to use more of it, even putting in cross-partitions of it, in the same way eggs and bottles are packed. Then we should see to it that the cases are put into carriers having on their bottoms four or five inches of straw. When a single shipping-case is shipped by express, the case itself ought to be packed in straw in another box.

Who would ever think of sending eggs, glassware, or delicate chinaware in solid wooden boxes without any straw or packing? and yet that is exactly what we have been

doing in shipping comb honey, fully as fragile and much heavier. Then we turn around and blame the railroad men, and they in turn advance the rates on us. It has also come to pass that many comb honey buyers quit the business because they would not stand the loss from breakage and leakage. Now, then, will the bee-keepers of this day and age wake up and put their honey in more up-to-date cases? Why should we continue to use the old-fashioned shipping-cases with solid no-drip cleats? The supply manufacturers will make whatever comb-honey producers ask for.

R. F. HOLTERMANN RETIRES FROM OUR EDITORIAL STAFF; OUR NEW CANADIAN EDITOR.

LITTLE did we think when we prepared the editorial on page 746 of our issue for Dec. 1st, speaking of Mr. Holtermann and some of his work as a bee-keeper, that he was about to retire from *all* apicultural writing. Shortly after this, we received a letter from our correspondent, stating that he felt it his duty, during the winter months at least, to take up again the preaching of the gospel; and in order to devote to this his undivided attention he deemed it necessary to give up all writing for the various publications with which he has been connected. On this account, he asked to be released; and while we were sorry to lose an old and valued correspondent, under the circumstances we did not feel that it would be right to dissuade him from his purpose.

As we understand it, Mr. Holtermann will still retain his interest in bees, and during the summer months will work them as heretofore, for it should be understood he is very extensively engaged in the business. We believe it is his intention, during the winter, to furnish his services free of charge in neglected fields where there is no money to pay for special gospel meetings. We infer that he will use the proceeds of his apiaries in the summer time, not only to support his family, but to defray the expenses of his special work. He will enter a large field, and we wish him Godspeed. We are sure he will carry with him the best wishes of his old friends, and especially of those interested in the spread of the gospel.

In the mean time we have engaged as our Canadian correspondent, Mr. J. L. Byer, of Mt. Joy, Ontario, who is in close touch with all apicultural doings across the border. We bespeak for Mr. Byer, who will begin his work next February, the same cordial support that was accorded his predecessor. He started with nothing but pluck and determination at the bottom round of the apicultural ladder. He has been climbing up and up until now he is very near the top. To drop the figure, he is now recognized as one of the leading lights in every thing pertaining to bee culture. As a racy paragrapher, one who knows how to pick out the interesting and helpful from his large reading; and experience, he has few equals.

CREDIT TO WHOM CREDIT IS DUE; THE HAND SYSTEM OF SWARM CONTROL. AND THE ALEXANDER METHOD OF CURING EUROPEAN FOUL BROOD, OLD.

AFTER we prepared the write-up of the J. E. Hand system of swarm control in this issue, page 797, we received a letter from Samuel Simmins, of Heathfield, Sussex, England, calling our attention to the fact that, away back as far as 1893, in his book, "A Modern Bee-farm," page 242, and later in the same work for 1904, page 216, he described a plan for working two colonies together that involved very much the same, if not identically the same, principle of swarm control as that described in recent issues of GLEANINGS by Mr. J. E. Hand, and in this issue. The latter's *manner* of switching the bees from one hive to another, however, is a little different, and, apparently, easier to apply.

The hive with its system of control, described in these early citations, is mentioned as a "double conqueror," and has been described in various editions of Simmins' book. We shall soon publish an article from Mr. Simmins in which he will go into details more at length; but for the present, at least, we thought it only fair to mention the matter at this time.

In this connection we may say that Mr. Simmins also draws our attention to the fact that he described in the early editions of his book, and in the little publication known as "Bee Chat," the basic principles of the Alexander system of curing foul brood years before Mr. Alexander gave it to the public. We take it that what Mr. Simmins has been describing was the European type of disease, and which was named by Cheshire as *Bacillus alvei*, and not the American type of disease; but, more anon.

A CORRECTION.

Mr. Simmins also insists that Langstroth nowhere, in any of his works, spoke of the fasting method of introducing queens, as we stated some time ago in these pages. We have made a careful search all through Langstroth's old books, and are obliged to confess that no such statement appears. Under the circumstances, it is but fair to give Mr. S. the benefit of the doubt, and we therefore stand corrected.

BEE-KEEPING FOR BEGINNERS AND "BACK-LOTTERS."

WE would call the attention of those who are just starting or thinking of starting in the bee business to the special series of articles written by Mr. F. Dundas Todd—the initial number of which appears in this issue. Mr. Todd was formerly editor of a magazine called the *Photo Beacon*, and which at that time, at least, was and is an authority on the subject of taking pictures. Ill health in his family compelled him to sever his connection with the *Beacon*, and go west. He had already begun bee-keeping before he left Chicago. While he, at

the time, was learning his A B C's in bee-keeping we were learning our A B C's in making pictures. Although we never met him personally, a very pleasant correspondence sprang up, during which we agreed to instruct him in bees if he would act as our Gamaliel in the art of photography. We read a number of his articles in the *Photo Beacon*, and were immediately struck by the simplicity and clearness of his style.

While our friend has never been an extensive bee-keeper, he has been one of a large class of professional men who take up bees for the pleasure of it as well as the profit. We call them "back-lotters" sometimes because they will run fifty or one hundred colonies in a back lot. Possibly 90 per cent of our readers belong to this class; that is to say, they have some other business or profession which they run in connection with their bees.

After Mr. Todd went west he took up his favorite pastime of bee-keeping in connection with his other professional work; and remembering his clear and simple style of writing it occurred to us he would be the man to write a series of articles for beginners and "back-lotters." We accordingly engaged him to do this work, and the first article is now before you. The fact that Mr. Todd knows the art of making himself clearly understood, and the further fact that he is an expert photographer, will mean that he will be able to furnish us some interesting matter.

A FEW TENTATIVE PROPOSITIONS ON IN-DOOR WINTERING.

FROM the correspondence that is coming in to this office, it is evident that a good many do not understand some of the basic principles governing successful wintering in winter repositories. In order to clear up the problem, perhaps it would be well to advance a few tentative propositions, and here they are:

1. Too low a temperature (below 40 Fahr. if long continued) in a bee-cellar will kill bees.

2. An excess of dampness in a cellar does no harm, necessarily, providing that the temperature is high enough, not lower than 45 or 50.

3. A low temperature, lower than 40 Fahr., and an excess of dampness, is a very bad combination, and will kill bees almost invariably. A high temperature, above 45, *but little or no ventilation*, will cause the bees to be uneasy. If the temperature is above 45 there should always be some ventilation. It should be continuous rather than intermittent at night, but better intermittent than no ventilation.

4. Bees can be wintered in a cellar without much ventilation, providing the temperature is held uniformly between 43 and 45, but they will winter much better if there is some fresh air.

5. A cellar may be too dry, for bees in a cellar require a little moisture. If there is no moisture, possibly a wet sponge should

be put in front of the entrances of some colonies.

6. Ideal conditions are, a nearly uniform temperature of 45 Fahr., a slight amount of moisture, *continuous ventilation*, and absolute darkness.

7. A very bad combination is a constantly varying temperature that goes down nearly to the freezing-point and then rises sometimes to 50 and 60 degrees. Such a variation is almost sure to cause disastrous losses before spring.

8. A high temperature, between 60 and 70, requires a great deal more ventilation than a temperature of 45. The higher the thermometer the more fresh air there should be. Too much can not be given when the thermometer shows 65 degrees.

9. The statement has gone out that bees do not need ventilation in a bee cellar. Fair results are sometimes secured when the mercury can be maintained at 45 degrees, with in two or three degrees; but far better results are obtained when there are continuous infusions of fresh air, air having been warmed somewhat by going under ground, and the foul air passing out through the top of the cellar.

10. Occasional disturbance from the bee-keeper entering the cellar does no harm.

11. Where the conditions in a cellar are such that there will be anywhere from three to four or even six inches of dead bees on the cellar bottom in the spring we should say that the owner of that cellar ought to investigate and ascertain the trouble. No matter if he does bring his colonies through alive, it could hardly be said that he was wintering his bees successfully. An ideal cellar is one that will bring the colonies through the winter in practically the same strength as when they went into winter quarters. We have seen a good many cellars where all the dead bees that would fly out on to the cellar bottom would not make a coalhodful to the hundred colonies in the spring. We have wintered bees at Medina time and time again in one of our cellars so successfully that one could walk across from one end of the cellar floor to the other in the spring and scarcely step on a single dead bee. Do not let any bee-keeper get it into his head that these old bees are superannuated and would die anyway. In any cellar where the conditions are such that there will be two or three inches of dead bees on the cellar bottom in the spring, there is something wrong.

12. Honey-dew, or very dark or an unpalatable or poorly ripened honey may cause dysentery before spring, even when all the other conditions are ideal.

13. Pollen in the combs does little or no harm. The old theory that pollen was the cause of much of our winter losses is now an exploded myth.

14. The size of entrances will depend upon the character of the cellar.

15. Shutting bees in the hives with wire cloth is usually attended with uneasiness; and, unless removed, there will be severe mortality.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

R. F. HOLTERMANN, that's a bright kink of yours when carrying a hive like that on p. 757, but there's a still better way, without standing frames on end, if you have end-cleats. See picture in "Forty Years among the Bees," p. 33. You will see that the strain is taken off the fingers, the weight resting mostly on the arms.

LET ME SAY to the Judge, page 725, that, although enlarged worker-cells failed in Medina, because too large, in Europe they claim to rear larger workers in cells enlarged only a little. If your foundation hangs within $\frac{1}{8}$ inch of the bottom-bar, I guarantee your bees, if they are like mine, will increase that $\frac{1}{8}$ to $\frac{3}{8}$. Most bee-keepers think the upper wire in a brood-frame very important, and I suspect that, although your frames are nicely filled without it, you will find that the upper cells are stretched enough so they will be used only for honey, not brood. Your rabbets look good. [Granted that you can produce larger bees in larger cells, have you gained any thing? Cheshire has made the statement that, if we could successfully enlarge our bees, we would put them out of harmony with all the blossoms visited.—ED.]

REV. J. G. DIGGES, experimenting in 1907, found that when working on white clover a bee's load rarely exceeds $\frac{1}{16}$ of a grain of nectar, yielding from $\frac{1}{16}$ to $\frac{1}{8}$ of a grain of ripened honey—an average of $\frac{1}{16}$ of a grain. That means 37,333 loads for a pound of honey; and a colony storing 5 pounds would bring 186,666 loads. Now some one tell us how many fielders in a colony, and we can tell how many trips each bee would make in a day. If 20,000 fielders, each bee would make about 9 trips. [From data prepared by Prof. Koons, of the Storrs Agricultural College, Connecticut, we figured that, while 10,000 bees might carry a pound of nectar, it would probably take 20,000 on an average. A good deal will depend on the source of the nectar, the kind of climate, and perhaps on the kind of bees. Prof. Koons' figures were practically verified by Prof. Gillette, of the Colorado Agricultural Experiment Station, and Prof. Lazenby, of the Ohio Experiment Station. Their calculations were arrived at by means of delicate balances used in chemical laboratories, and we would naturally infer that they are not far from right.—ED.]

ENTRANCES 16 inches apart will not work, page 764. No; but they may do better 32 inches apart. And you can have hives 16 inches from center to center and entrances practically 32 inches apart by having the entrances in pairs. I know, for I've tried it. [Your statement, then, is exactly in

harmony with our answer on page 764. Colonies can be worked in pairs with entrances 16 inches apart, or from center to center; but when we put more than two side by side, as Mr. Phillips outlined, we encounter difficulties—at least that has been our experience. One great reason why house-aparies have not given a greater degree of satisfaction is because of this very fact, that the strong colonies become too strong at the expense of the weaker ones.—ED.]

WESLEY FOSTER, page 750, advises 6×8 "Fragile" labels on honey-packages. Good, but too troublesome to get. Why doesn't the Root Co. list them in supplies? [For years the publishers of this journal have listed and sold caution cards or labels such as you describe. For example, the design below is furnished in heavy manila card-

FRAGILE! COMB HONEY

Handle with extra care.
Do not move it on hand trucks. 
Do not drop it. Load with finger pointing toward bow, engine, or horse.
Do not dump it.
Set it down easy.
Haul only on vehicles with springs.

board, 5×7 inches, printed in red ink, for a cent apiece, or \$2.00 for 500. You will find them listed in the regular honey-label catalog.—ED.]

I'M PRETTY badly chewed up on page 748, but still have enough life left to fight back a little. Even though it should be that "man will never produce a non-swarming race," you fellows shouldn't throw cold water on any one who aims in that direction. You fell down on the red-clover-queen proposition, but did you lie there whimpering in the dust? Not a bit of it; but you jump up and say, "We are in hopes some day of running across another 'sport.'" There is a difference in tongue-length, and if the thing is thought worth following up some day there may be the fixing of a strain with long tongues. Same with swarming. There is a marked difference in the tendency to swarm under the same conditions. Do you dare to say that careful selection may not increase the tendency toward non-swarming? Increase it far enough, and fix it, and there you are. "Tendency to revert?" So there is in all improvement in breeding; but that doesn't stop the improvement. [We did not say that something could not be done toward securing a strain of bees that would be less inclined to swarm than the average stock; but we did take issue with you on the point that man could ever "produce a non-swarming race of bees." We admit that the swarming tendency, or any other undesirable tendency, can be mitigated; but unless the apiarist is "on to his job," and at it all the time, there is a strong tendency to revert to the original type. This is experienced in poultry and in all kinds of farm stock.—ED.]

Siftings

By J. E. CRANE, Middlebury, Vt.

Our congratulations are due Wesley Foster, of Boulder, Col., page 609, Oct. 1.

My experience tallies with that of Dr. Miller and his assistant in regard to the preference bees have for an old comb over a new one, page 646, Oct. 15.

Bee-keeping in Southern California, by Mrs. Acklin, is certainly refreshing. One of the pleasures of reading bee-journals is to see how different conditions are in different sections of our great country.

We are grateful to Dr. Miller for informing us that honey-comb in the Bible always means comb honey, page 612, Oct. 1. Now will he tell us if the "droppings of the honey-comb" means extracted honey?

On page 612, Dr. Miller says he doesn't want the bottom of his sections mussed up with wax and honey. Well, we use thin strips of wood under our sections, and we do not have *any* propolis on them.

Pollen in a queen-cell is a sign of queenlessness, says Dr. Miller, page 646, Oct. 15. But I have never seen pollen, that I remember, in a normal queen-cell; but I see every year a good many queen-cells started over cells of pollen. This is a sure sign of queenlessness.

It almost takes my breath away to read how quick Mr. Scholl can get the bees out of supers with smoke, page 647, Oct. 15. This works pretty well here till the flow of honey is over; then the bees left in the super, when removed from the hive, stop and fill themselves with honey, breaking the cappings and making the sections *unsightly*. It may not matter with chunk honey.

The editor speaks of "bees making trouble in candy-factories," page 644. I would put it in a different way. How would it sound to say, "candy-factories making trouble for bee-keepers"? Would not a law compelling candy-manufacturers and those selling sweets in the open near where bees are kept, and other places attractive to bees, and where thousands are killed, to screen their windows or their sweets, be as sensible as the law against spraying fruit-trees when in bloom?

Quite right you are, Mr. Editor, in advising late feeding if not done before, though you have to use overcoat and mittens; this is a decided advance, for not long ago we thought it would be almost fatal to feed

late. One caution, however—be sure to feed with pepper-box style of feeder, and place it over the center of the cluster, and, as you say, feed hot.

I congratulate Dr. Miller that his bees swarm at the proper time, just as the books say they should, page 578. That he never heard before of a swarm waiting till a virgin is about to emerge surprises me. We have lots of them that do that very thing, especially early in the season. It is fun, too, to get a lot of queen-cages after such swarms and cage a lot of virgins as they emerge after the old queen has left. We are dead sure they are all raised under the swarming impulse.

Whew! a flying-machine! page 628, Oct. 1. Well, this reminds me when I see this and other illustrations what a change there has been in our journals in the last thirty or thirty-five years. Then we were trying to walk, while now we are discussing how to manage outyards with automobiles, and market immense quantities of honey. Then we had only a few plain woodcuts, while now we have a generous array of beautiful photogravures with pictures of a large share of the successful bee-keepers of the country.

I was glad to see, page 724, Nov. 15, that "the Judge" has not lost his interest in bees. While at our State capitol a few days ago he invited us to stay over night at his pleasant home in Barre. While there he very politely informed me that my statement in Siftings, that we have a law in this State prohibiting spraying while fruit-trees are in bloom, was incorrect, as the law has been repealed. He has my thanks, and I hasten to make the correction. However, the law was in force long enough to educate our fruit-growers as to the folly of spraying while trees are in bloom.

On page 627, Oct. 1, we see a whole row of hives covered with tarred paper lined with dry leaves and other non-conducting material; and it seems to me that plan might work very satisfactorily. Some three years ago I tried four hives with tarred paper. All were single-board hives, and two had cushions on top, and came out fairly well in the spring. The other two came through the winter quite too weak to be of any service in storing surplus during the summer. By putting between the paper and brood-chamber a considerable amount of packing, it would not only protect the brood-chamber from excessive heat during sunny days in winter, but absorb a large amount of heat that would keep the bees warm for some time after the sun failed to shine. We do not want to heat the brood-chamber during winter so hot as to excite the bees to excessive activity, as it weakens their vitality and wears them out before spring.

Bee-keeping in the Southwest

By LOUIS SCHOLL, New Braunfels, Texas

THE DISTANCE BETWEEN APIARIES.

There is a great difference of opinion as to how far apiaries should be placed from each other, as well as to how many colonies should be kept in a location. This, of course, depends very much upon the character of the respective localities and the honey-flows. However, on the whole there is quite a difference of opinion among bee-keepers, even if the same kind of location is taken into consideration.

We have found to our entire satisfaction that it is better to place fewer colonies in a place, and scatter the bees in a larger number of apiaries. It is true that, during good years, the bees in certain locations may not gather all the nectar; but there is an advantage in having some nectar for the bees that are there during a poor season. For this reason we prefer to have our apiaries about three miles apart, except in cases where the locality is broken up or irregular, so that the apiaries must be located wherever a suitable spot is found.

After trying various numbers of colonies in a place and various distances between places, we have arrived at the conclusion that the above distance, with 50 colonies in each apiary, is the most satisfactory arrangement. We should prefer this, even if 100 colonies can be kept successfully in an apiary. Besides distributing the bees over the territory which can be gleaned more profitably, and to better advantage, we have found it a great advantage to work smaller apiaries of 50 colonies each over larger ones. This is especially true with our method of management, by which we are able to finish just so much work with one visit as is required by that number in a place. During times when bees are inclined to rob, which here in our localities is almost at all times when honey is not pouring in, we can finish up the "job" at one of these yards and work at another three miles away before the bees make trouble. If it becomes necessary to work several days with 100 colonies the trouble is often serious before the work can be finished in an apiary of 100 colonies all in one yard.

We claim that our bees can gather to advantage if they are not required to fly a great distance. Some authorities differ with us; and right in line with this is a letter from L. B. Smith, of Rescue, Texas:

We often see the question asked, "How far apart should apiaries be established for the best results in storing honey?" The answers range from one to five miles apart. If I were to answer that question I would say from five to eight miles apart. Suppose some of you who believe bees never go over one mile and a half for stores try putting all the bees you have scattered around a mile or two apart into one apiary, and see how much decrease you would

have in the amount of stores. I'll warrant some of you will have less faith in this mile-and-a-half flight of bees.

A thing that we have tried in a reverse way! Having nearly a hundred colonies in a place showed that the average yield per colony was not so great as other yards of a lesser number in the same kind of location. Moving away half the number to a new place nearly three miles away *proved* to us *conclusively* that it was an advantage—all the apiaries in the same kind of locations averaged nearly alike. See?



MORE NORTHERN "CHUNK" HONEY.

Aha! More and more the bulk-comb-honey idea is gaining ground in other parts of the country than the great Lone Star State, "the home of bulk comb honey." The editor, in the Nov. 1st issue, says, "Those who do a business of putting up honey in tumblers or large-mouthed bottles will find it will pay them well to take all their broken and unsalable comb honey, cut it up into suitable-sized chunks, and put them in tumblers of nice extracted honey. There was a time when the public was a little suspicious of honey in this form; but since the national pure-food laws have gone into effect the bottler will find ready sale for chunk honey in tumblers."

Yes, Mr. Editor, that's the idea all right; and we wouldn't stop there. Put up more of comb honey, produced so much easier in good shallow frames instead of section boxes, into nice bright tin friction-top pails and cans of the 3-lb., 6-lb., and 12-lb. sizes, that we have long ago adopted here in Texas, and you will find ready sale for these also in a short time if not now. It will enable you to introduce honey into the homes of a great mass of people who would buy comb honey—real nice comb honey—at a price which they can afford, and people who do not care to buy extracted honey in any kind of package.

Bulk comb honey will help the markets in more ways than one. More honey will be consumed if bulk comb honey can be had by those who do not care for extracted honey, and those who can not afford the price of section honey. It will aid in a better distribution of honey, keeping a large quantity away from the general markets, which *must* aid in keeping up the prices.

We have taken the liberty of repeating your entire editorial, because it covers two very valuable points favoring the production and sale of bulk comb honey—first, that the suspicions of adulteration of such a product are fast giving way on account of the pure-food laws; and, second, because it shows that a ready sale may be found for such honey. Another reason for copying it is that some of my correspondents who have asked me for just such information through this department may not have noticed the editorial in the former issue.

Conversations with Doolittle

At Borodino

ARRANGING AN APIARY SYMMETRICALLY.

"I have 107 colonies of bees, all nicely housed in the cellar; but next spring I am to move to a new location. Where I now live I have been in the habit of having my hives arranged 'any old way,' and I am tired of such work. When I get to my new place will it be advisable to arrange the hives in the apiary symmetrically, with reference to each other, and is there any harm likely to result from such arrangement?"

"For your convenience I think such arrangement decidedly advisable, and, if rightly done, I think no harm can result.

"There are two objections when hives are set too close, the first of which is quite serious—the loss of young queens. Where an apiary is laid out on the hexagonal plan, as is considered the best by our most practical apiarists there is quite a sameness about the rows, and the hives in the rows, throughout the whole apiary; and if the hives are too close together, the young queens, when they go forth to meet the drone, seem to fail in marking the hive she came from, so that often on her return she enters the wrong hive, in which case she is killed. This results in the loss of the colony from which she came, unless the bee-keeper notices it and supplies the bees with another queen.

"After trying different distances I now use a ten-foot plan—that is, the rows of hives are ten feet apart, and the hives stand ten feet apart in the rows, from center to center."

"I suppose I can have all the room I need; but what would the result be if I use half that space, or five feet from center to center?"

"Unless you take some other precaution I should fear a loss; and, besides, with hives that near together you would be discomforted in your work. Each of your hives will take up nearly two feet of room, so you would have only about three feet left when going straight along the rows; and when it comes to traveling obliquely, as you will want to do more often than otherwise, you will have still less. Then if you use a wheelbarrow, cart, or something of that kind to convey hives, supers, honey, etc., about the apiary, you will be coming in contact with the hives so often that you will wish you had kept on in the old way. But with the ten-foot plan you will be pleased with all the different streets and avenues that the hexagonal plan will give all through the whole yard."

"I suppose the hives could be painted different colors, thus helping the queens in knowing their own hives?"

"Painting helps somewhat; but trees of different kinds and sizes are of much greater benefit. With half a dozen trees scattered about in an apiary of 200 colonies there is little trouble, and they are very restful,

on account of shade, to the hot and tired bee-keeper when the mercury is hovering from 90 to 100 degrees."

"What was the other item besides the young queens failing in their markings?"

"If you practice clipping the queens' wings, as nearly all bee-keepers do, a returning swarm sometimes attempts to enter adjoining hives. This can be remedied by covering them with sheets, where natural swarming is allowed. But the day of natural swarming is nearly or quite a thing of the past with the specialist; and where such is not allowed, of course this part cuts no figure in the matter."

"I suppose the young bees mix some on their first flight, in closely laid-out apiaries?"

"Yes, to a certain extent; but with me this has been of little account, and especially as I have always had a few trees on the outskirts of the apiary."

"Tell me how I may best lay out my ground for 200 hives."

"This I have told several times in the different bee-papers."

"This may be so; but I am a beginner in trying to keep a tidy apiary, and beginners are coming on all the while. Such do not want to wade through old musty volumes to find out what was told long years ago."

"Procure a string about 210 feet long, and tie each end to a strong nicely sharpened stake. Next stretch it just where you wish your first row of 20 hives to be. If this string is of common binder twine, it will be better than any thing else you can get, as it stretches but little. Having placed your line, measure off five feet from one end of it, and at that place tie a red string to the twine. Now measure off five feet from this string, out along the line, and tie a white string. Five feet further tie another red string, and five feet from this another white, and so on until you reach the fortieth string tied on. Now stick a little stake at each of the twenty red strings, for here are to set your twenty colonies on the first row. Now move your line ahead ten feet and stick a stake at each of the white strings, where you will set the next twenty hives. Move ahead ten feet again, sticking the stakes at the red, then ahead ten feet again, sticking stakes at the white, and so on till you have your twentieth row completed. You will now level down a nice place at each little stake, and, if you can afford it, make a permanent plot, three by four feet, at each stake, of concrete, on which to set each hive. In this way you will have no trouble about weeds and grass springing up all about your hive, so close up that it will be a nuisance to the bees, and to yourself when mowing the yard two or three times a year. It is well to have the hives face the south, and, if so, the four feet should be north and south, so that this concrete block will go out the furthest in front of the entrance, as this helps the bees very much in their flights where the apiarist does not mow the grass at exactly the time needed."

General Correspondence

PROGRESSIVE ADVERTISING.

A Few Points that Every Bee-keeper who has Honey to Dispose of Should Carefully Consider.

BY E. G. HAND.

Has it ever occurred to you, gentle reader, how strange it is that the average bee-keeper seems to have an idea that he has practically no control over the demand for honey in his locality, even as the fraternity at large has apparently given up what little glimmer of hope it ever had of exercising a control over the general demand for its stock in trade? Whatever may be the explanation, the bee-keepers of the country seem to have resigned themselves to unprotected acceptance of whatever demand the fickle public may choose to make upon their product. When a good crop is secured, either locally or generally, the first result is usually quite a panic on the part of the producers to get it off their hands as quickly as possible. For fear the other fellow will get his crop on the market first, the price is pruned to the necessary extent to induce the commission man to take the crop. The commission man chops his price to the wholesaler, the wholesaler to the retailer, and the retailer to the consumer. This, of course, stimulates the demand to a certain extent, though to a limited one only. But wherein does the bee-keeper profit by his big crop under these conditions? He has had more labor with his heavy crop than he would have had with a lighter one, and is no better off.

With this scrambly method of marketing pursued, what surprises me is not that the price of honey is so low, but that the large amount produced each year is disposed of at all. The average producer, especially the large producer, does practically nothing to help place his product in the hands of the consumer. He seems to have the impression that, when the crop is out of his hands, that is as far as he is concerned in it, and that what becomes of it afterward does not make any particular immediate difference to him. "Let the commission man and the retailer find their own market; they took the job and it's up to them," appears to be about the stand he takes.

Now, this is all wrong, and the sooner the bee-keeping fraternity learns that there is easier money in the proper and scientific disposal of a crop, right up to the time it enters the hands of the consumer, than there is in the production of the crop—well, the better it will be for the fraternity.

Honey is but a vague word to the great majority of the population. Millions of people never taste it from one year's end to another, and most of them have forgotten

its very existence, almost. This is not because these people do not like it, but because it has never occurred to them to regard honey as an article of food; and the reason such a thought has never occurred to them is, nine times out of ten, because nothing has ever happened to suggest such a thought.

It has been my experience, and I believe if a "census" were taken it would be found to be the case the country over, that 75 per cent of the honey produced is used by 25 per cent of the people. Why is this? Principally because the 25 per cent have, more or less by chance, discovered that honey is intended to be eaten, and is good to eat every day, and have accordingly formed the "honey habit." The other 75 per cent are almost complete strangers to the very name of honey; and, unless they happen to have it personally and directly brought to their notice by a "honey peddler," or chance to fall over it in their blunderings through the underworld of the grocery store, the probabilities are that they will never come to be users of any great amount of honey. People get into ruts in the matter of the food they eat, just as they do in the matter of the clothes they wear or the thoughts they think.

It isn't because he is stupid that the average man fails to take advantage of the good things of life. It is usually because he is asleep. All he needs is to be awakened up, and the present-day advertising campaign is planned with just this idea. No matter what it is that is being advertised, the principle is the same.

Now, let us see how this principle can be applied to the honey-selling proposition. Let us see by what means the producer of honey can induce the somnolent 75 per cent of the population to awaken to the fact that it is to their advantage to use honey as a regular article of diet. I am speaking now more particularly to the individual producer who is bent on stimulating his local market; and if he will work somewhat along the lines I suggest I think he will be surprised at the ultimate result. I say "ultimate," because it must be understood right on the start that advertising does not jerk, but *pulls*. The man who expects to get big results from two or three advertisements is in for a disappointment. The proper plan is to decide how much it will be wise to invest in advertising, taking into account the size of your market and the amount of honey you want to sell in it, and then arrange to spread that expenditure over the whole year, or at least as long as you have any honey to sell.

In these days of cheap newspapers the easiest, quickest, cheapest and most effectual way to get an audience with the public and arouse interest in any legitimate article is through the columns of the papers. There is scarcely a house in the land at the present time into which a newspaper of some kind does not find its way with more or less regularity. As the purpose for which the paper is

taken into the house is that the people who live there shall know the news of the neighborhood and of the world at large, it naturally follows that whatever of news the paper contains will be read and remembered for a time at least.

What is news? We will define it as something the reader has not heard of or thought of before, or additional information on some subject upon which he has cause to be more or less interested. While he is reading, his mind is in its most receptive mood, and, of all times, this is the most favorable to get his attention. We will, therefore, set out to get him interested in the honey question. Of course, it is to be presupposed that he has heard of the existence of honey, and knows something of its qualities. He may have even tasted it once or twice when he was a boy. We will begin by drawing his attention to honey in general, and to our own honey in particular, by having inserted in a prominent place in the paper a little item somewhat after this fashion:

HONEY.

Have you bought any honey yet this fall? If not, you are not getting the best you can afford of the good things that are going, for honey is universally acknowledged to be one of the most delicious articles of food, and the price of it rules lower than that of most good things.

Honey from my apiary has been produced and put up in the most approved and careful manner. Its strong point is *quality*.

Your name and address will, of course, follow the above, in type about one size lighter than the headline, and the whole can occupy any space up to three inches in the column, but preferably not less than two or two and a half, unless it be in a paper in which the advertising rates are high.

This item will suggest honey to the reader, will draw his attention to its qualities, and to you as a producer of honey, which is enough for a start. It may not arouse him to a point where he will go out and buy some of your honey, but it should not be expected to. You can't drive a nail with one blow of a hammer, you know. Next week we will give him an item like this:

HONEY IS CHEAP.

The impression prevails that honey is expensive; but it is a wrong impression, dating from the time when practically nothing was known about the management of that most industrious of creatures, the honey-bee. Modern invention has made it possible to produce honey at a price within the reach of all—ten cents a pound—and the quality is better than was possible by the old methods.

That's news, all right. He always thought honey was an expensive luxury, beyond the means of any except rich folks—that is, if he ever thought of it at all, which is very doubtful. Besides, that is the second thing he has read about honey lately. There may be something more next week. Yes, here it is:

COMPARE PRICES.

Compare the price of some of the every-day articles of food—fruit, butter, meat, etc.—with the price of honey. Consider the fact that honey is one of the very best of nature's food products. Then ask yourself why it is not more largely used—why you yourself don't use more of it—when you can buy it, guaranteed absolutely pure, for ten cents a pound.

This will set Mr. Reader on a new line of thinking. And so on. In a very short time we have the average reader's attention. In a little more time we have his interest; and before long, provided we always have a *new*, fresh, easy story for him with each issue of his paper, we have what we started out to get—his custom. He may buy at the grocery store, if your honey is on sale there, so that you do not see him come direct, but you get the benefit all the same.

The prices quoted in these advertisements are, of course, to be the same as you are asking for your honey in whatever form your advertisement may speak of it, whether it be comb honey, or extracted in glass or tin containers. The great point in advertising is to keep the advertisement always new and interesting, and, of course, always in accordance with facts. Incorrect or deceptive statements or inferences in advertising are fatal to the advertiser's business, to say nothing of the other points against them.

Here are a few more sample advertisements from a series I used in a successful campaign. They can be changed around, enlarged upon, or altered in any way to suit conditions anywhere, and are just given here to serve as samples:

DON'T TRY

the experiment of eating a lot of honey "straight" to see if you like it—it is not a fair test. Honey is a concentrated food, and should be eaten in conjunction with something that gives bulk—bread, for instance. Properly used, there is nothing that can compare with it.

And it is cheap—ten cents a pound.

YOUR GROCER

sells butter at about twenty cents a pound, and doesn't guarantee the quality. You buy it because you don't think there is any thing that will take its place.

He also sells honey at ten cents a pound. It makes a good substitute for butter. If the honey came from my apiary I will stand for the quality.

FOR A CHANGE.

Did you ever know a youngster that didn't get tired of bread and butter, and want a change?

And wouldn't he consider himself "in clover" if he got bread and honey half the time instead of bread and butter?

Honey costs only 10 cents a pound, while butter costs about twice that much.

NOTHING LIKE IT.

Honey—the pure nectar of flowers—stands in a class by itself as an article of food. There is nothing to which it can be compared.

When you want something to help out your fruit supply, get a can of honey and you have the best thing there is.

If the honey comes from my apiary, it has been produced and put up under conditions which make it the equal of any honey you can buy.

IT IS BETTER.

An article made or produced by a specialist is better than the average, because the producer makes a special study of the production of that particular article, and has facilities for putting it on the market in the best possible way.

For that reason honey from my apiary is better than the average. I make a specialty of its production, and have facilities which make it possible for me to put it out in the best condition.

ALWAYS IN SEASON.

Some people have a notion that honey is just a cold-weather article of food, and to be used only in the winter, or else they think it will spoil quickly in warm weather.

Other people know better, and use it right along.

Honey is always seasonable, and, if properly kept, never deteriorates in quality. Get in with the crowd who use it every day.

YOU PAY

about 20 cents a pound for butter if you want that which you know is good, and use it right along every day because you like it.

You probably like honey too, but have an idea it is too expensive to use every day. You can buy the best honey on the market for 10 cents a pound. That's not very expensive, is it? Get a can.

REDUCE EXPENSES

never so little, and you will soon find your "cash balance" increasing. One of the most expensive articles of food that everybody uses every day is butter. Good butter costs 20 cents a pound. You won't want much butter if you eat honey with your bread. Good honey costs 10 cents a pound—just half the price of butter.

There are many other phases of the honey question that can be dealt with in this same way; for instance, the proper care of honey; the difference between good and inferior grades; and why the difference exists; honey from different flowers; how nectar is gathered, stored, and ripened in the hives; how it is extracted, etc., interspersed with little items of natural history of the bee, and such subjects. It is an easy matter to get out one advertisement a week for a year, or almost indefinitely, for that matter, once the idea is grasped, and the interest they will arouse in your business, and the extent to which they will increase the demand for your honey will keep on growing so long as the advertisements are run, provided your honey is of the quality it should be before you should think of advertising it. And you can command a price for your honey from one to three cents a pound above that obtained by any tramp honey which may be on your local market at the same time. Your educational campaign will, to a certain extent, stimulate the demand for this latter grade too, which, however, is no detriment to you, but rather the reverse. The main object is to get the public started using honey. They will then soon learn to demand the best.

Cobalt, Ontario.

DO THE BEES' LARVÆ CAP THEIR OWN CELLS?

BY R. M'CULLOUGH.

I should like to take issue with the seemingly undisputed statement that the bees cap their brood, by stating that I think the larvæ do the capping themselves; that is, that the capping is a part of the cocoon itself. I say "I think," for I have never seen the larva in the act, although I have endeavored for two years to do so, and, for that matter, I have not seen the bees in the act of building the cappings, except in one instance—that of building the wax tip on a queen-cell, which was already capped with that fibrous material peculiar to cell-capping before the waxwork began. My theory is, therefore, based on circumstantial evidence, if I may use the term, and will try to prove my point by the following:

1. It is unreasonable to presume that the bee larva would depart from the ordinary procedure of insect larva in spinning a cocoon open at one end, to be completed from without.

2. The texture of the capping is the same as that of the cocoon in the sides and bottom of the cell. I doubt if the mature bee can produce this material.

3. The capping is an integral part of the cocoon. I have proved this by being able to remove the entire cocoon from a cell by grasping the ragged edge of the capping of a cell from which a young bee had just emerged, and pulling it out.

4. I read in the A B C book that "Bees, like other folks, sometimes make mistakes; for they do not seem to know any better than to use a drone larva for rearing a queen if such happens to be present."

This indicates to me that bees do not know the sex of their larvæ. If this is true, why do they treat a drone larva in a queen-cell as a queen larva, but treat a drone larva in a worker-cell as a drone larva by building the raised cap over it? My answer is, that the larva does the capping itself, and with a cap peculiar to its kind.

That the queen larva caps itself, I am pretty certain, the bees building on the wax tip afterward. Why should the worker and drone larva not do the same?

I further notice in the A B C book that bees sometimes leave their young uncapped; but Dr. Miller, in a note, says, "I have observed somewhat closely for years, and I think these bees are bareheaded because worms have eaten the cappings." So this proves nothing against my theory.

While I have this idea pretty well fixed in my mind, I am open to conviction.

Pittsburg, Pa.

[We are afraid that your conclusions are not entirely correct, although partially so. Cheshire (*Bees and Bee-keeping*, Vol. I., pp. 174, 175) explains that the cappings over the brood are made of debris, including pollen grains, etc., bound together with shreds of wax (all this showing under the microscope). On the inner side of this complex capping, the cocoon threads, forming a network, catch on the prominences of the wax shreds or pollen grains. The bees, then, do the capping, but the larvæ spin the ends of the cocoons inside. Your observation in regard to the queen larva is substantially correct, and very much the same is true, apparently, in the case of worker larvæ.—ED.]

How to Keep Royal Jelly Fresh.

How long will royal jelly stay fresh or keep good in a queen-cell for the purpose of transferring to a queen-cell cup? Does it have to be kept warm, and used the same day, or can it be kept for a few days and used when it is cold?

Fruitvale, Cal.

L. R. GREEN.

[Royal jelly should be used as soon as possible after being taken from the hive, for it turns rancid very quickly. We have known of queen-breeders who kept cells of royal jelly over night by sticking the end of each cell together to keep out the air and then placing them in a warm room. We can not recommend this practice, however, as it stands to reason that the fresh food would be better.—ED.]

ELIMINATING THE SWARMING INSTINCT BY BREEDING.

The Tendency to Sit has been Bred from Certain Strains of Fowls; is Not the Swarming Impulse of Bees Akin to the Tendency to Sit in Fowls?

BY W. E. FLOWER.

Mr. R. F. Holtermann, page 715, Nov. 15, asks a question concerning cat-breeding, which I should like to answer. In my article, page 632, Oct. 1, I said, "It is a fact that *Manx* cats have no tails," but the printer made me say, "Many cats have no tails." So far as I know, *Manx* cats do not exist in a state of nature; but by careful breeding they can be depended upon to reproduce their kind. The man who follows nature, no matter whether he breeds hens or horses, must be satisfied with natural results. I cited the 31st chapter of Genesis as an instance of what could be done when the mating of the parent stock could be controlled.

Thousands of queens are reared artificially, so are thousands and tens of thousands of chickens; likewise, many thousands of colonies of bees are made every year without natural swarming. The point I wish to make is, that it would be possible by careful selection to breed out the swarming impulse just as the natural instinct to reproduce by sitting has been bred out of the Leghorn and other breeds of hens.

Darwin, in "Variation of Animals and Plants Under Domestication," says, "The progeny of the first cross always reverts to one or the other of the original ancestors." Now, I might develop a non-swarming strain of bees by the method Mr. Holtermann suggested; but a single mismated queen would upset my efforts and put me back where I started from; whereas if I could control the mating of every queen as I can the mating of every hen, progress would be sure and the goal would soon be reached.

Mr. Raleigh Thompson, page 736, Nov. 15, indirectly makes the statement that I will never produce a non-swarming race of bees. He may be right, as I am near the three-score-and-ten mark; but if I could get some of our queen-breeders to see the thing in its true light the result might be accomplished. Ashbourne, Pa.

[We do not wish to be pessimistic; but we feel that, though different breeds of hens have been developed that have lost to a great extent the tendency to sit, the *elimination* of the swarming instinct in bees would be wellnigh impossible, because of the impracticability of controlling the male parentage. However, we believe that, under certain conditions and in certain localities, there are strains of bees which possibly by chance have developed with less of a tendency to swarm; but, on the other hand, if man steps in and tries to accentuate this non-swarming tendency, his efforts may perhaps result in a greater tendency to

swarm rather than less, because, as we stated before, he can not select the drones that he wishes to mate with his queens.

The sitting tendency among hens is the most similar illustration that we know of to the swarming instinct of bees; but since man, even when he can control the mating of fowls, has never been successful in eliminating *all* tendency to sit, it would seem like a hopeless case to get tangible results along the non-swarming line among bees. However, in this connection see what G. W. Bullamore has to say on the subject in his article which follows.—Ed.]

NATURAL SELECTION AND THE HABITS OF BEES.

How Natural Selection Perpetuates such Habits as Running Upward when the Hives are Drummed; Swarming, Gathering Surplus Honey, Robbing, etc.

BY G. W. BULLAMORE.

[We seldom stop to think why it is that bees have certain habits; for, in the hurry and worry of the present day, we are more apt to look at these things as a matter of course. Mr. Bullamore, in the following excellent article, gives what seems to us a very satisfactory explanation, showing why colonies of bees which have not exhibited certain traits die off, so that those which do, by natural selection, live on to perpetuate these traits. We commend this article to the careful study of our readers.—Ed.]

The efficacy of environment in modifying the habits of honey-bees has been called in question by Messrs. M. E. Pruitt, page 529, Aug. 15, and R. F. Holtermann, page 548, Sept. 1. I am a firm believer in its potency, and am stating the case from my own standpoint, hoping that it may prove of interest.

I surmise that the bees from which our present stocks have descended dwelt in the primeval forest, and were very similar in their habits to the modern *Apis dorsata*. Their migratory instincts still survive, and are occasionally manifested by a "hunger swarm." The building of comb in the open air is also a survival. And now let us enquire why bees are subdued by smoke.

At the first puffs of the smoker the bees commence to gorge themselves on the unsealed or recently capped honey. If the smoking is continued they become excited and are eventually driven from the combs into the air. If the queen is young and active, she will take flight with the bees. I look upon these actions as survivals. In the past history of the race they were advantageous.

When the world was young, and forest fires resulted from volcanic and other causes, the drifting smoke would bring about these actions. Colonies that were terrified by the smoke, and took wing with laden honey-sacs escaped the fire and started afresh. Successive fires would wipe out all stocks in which this trait did not appear, and the peculiarity would become strongly impressed

on all bees by this process of natural selection.

Another peculiarity of bees is that they run upward when the sides of the hive are drummed. I explain this by supposing that, when earthquakes were common, the bees that did not run upward when their combs commenced to tremble were involved in the general ruin when the combs collapsed. Those that ran upward lived to restart the hive with their own honey and that of the less fortunate stocks. The running habit would be transmitted. The other stocks, being dead, would transmit no habits.

It is frequently stated that the large number of drones reared in a hive is for the purpose of facilitating the chances of a queen in meeting one of them when she takes her wedding-flight. Undoubtedly this is a result of the large number; but as they are often supplied by a colony different from that from which the queen issues, I think that natural selection furnishes a far more satisfactory explanation. Every hive is the product of a drone and a queen-bee. The stock that supplies the queen must also supply twenty thousand bees as an escort. The drone with his thousand or more brothers required far less effort to produce. Natural selection, therefore, favors the drone-supplying colony, and the stock that rears the greatest number of drones has the best chance of being represented in a large number of hives the following season. Heredity would perpetuate the appearance of the drone-rearing instinct in these colonies and their descendants, and in a few generations it would be general.

Gradual change of climate or the invasion of more temperate regions by swarms of bees would result in the modification of the swarming instinct. Excessive swarming and honey surplus could not exist together, and the gradually lengthening winters would kill off all stocks that did not store in excess of their immediate wants.

With regard to the modification of the swarming instinct, Dzierzon was of the opinion that the swarming habits of the heath bee of Germany were due to the system of management. This is understood to mean that, by inciting bees to swarm, they acquire the habit and transmit it to future generations. I very much doubt if this is true, and should prefer to explain it by suggesting that, where swarming is favored, the increase is greatest of those stocks with marked swarming propensities, and that this results eventually in the swamping of the non-swarming strains. If we breed from those strains with the least tendency to swarm, this habit will undoubtedly become modified. Any attempt to alter it by artificially preventing it for several generations is bound to meet with failure. The inheritance of an acquired characteristic is doubtful in any case, and in bees the heredity is vested in the queen and the drones, while checks to swarming mostly influence the workers who leave no descendants.

Surprise is expressed at times that bees

gather honey in excess of their winter requirements. The last four seasons in this part of England supply the explanation. The honey surplus for the four years is only that of one good year. Wild stocks have mostly died out; and where a stock *has* survived without a bee-keeper's aid it is owing to the quite necessary habit of storing an excess in years of plenty.

Similar climatic conditions are probably responsible for the prevalence of the robbing instinct. It is undoubtedly better for the race that one stock should live through the winter at the expense of the four or five that they have "cleaned out" than that all should perish before the spring comes around again.

Like any other animals bred by man, bees are capable of being changed. To do so, however, it is necessary to start to work in the right way. Mr. Holtermann asks how many generations it will take to teach bees to dread smoke. If bees had not dreaded smoke, probably there would have been no bees at the present day. They would have been one of the species of insects that have died out. If we came across their fossil remains we should send them to the museums, and that would be the end of the matter. Having never known them we should never miss them. Mr. Pruitt refers to the continuance of lambs' tails as a clinching argument against the possibility of modifying the swarming habit. But have sheep-breeders ever tried to produce a bobtailed lamb? If there existed a demand for such an article I feel sure it would be supplied. Tailless sheep are no more unthinkable than hornless sheep. If there was any money in it, a chance variation in the length of a lamb's tail would very soon become the characteristic of a breed.

We could never teach an Italian queen to breed five-banded bees; but by taking advantage of a chance variation they have been produced. Nevertheless, we can not foretell the time it would take to repeat the experiments with another hive of bees. A scientific breeder in England once desired to change a breed of pigeons. The new variety was to be like the old in every respect with the exception of the color of the head. This was to be white instead of black. The fancier was twenty years accomplishing his task. Most of the time was spent in waiting for a white feather to appear in the head plumage. After that arrived his task was comparatively easy. It is just the same with bees. If we requeen from desirable stocks we perpetuate their qualities. If no stock has the desired quality we can only wait until the quality, or some modification of it, appears in a particular hive.

Until we go thoroughly into the question of natural selection and disease, we shall never understand the foul-brood problem and the apparently contradictory statements that are made as to immunity. The subject, however, is too big to tackle at the end of this paper.

Albury, Herts., England.



H. L. PARKS, OF THE FIRM OF METCALFE & PARKS, TAKING OFF HONEY IN THE "NEW MEXICO" WAY.

A NEW-MEXICO WAY OF REMOVING HONEY FROM THE HIVES AND CARRYING IT TO THE HONEY-HOUSE.

The Advantage of Finishing One Kind of Work Before Beginning Another.

BY O. B. METCALFE.

At the request of the editor I have taken a number of pictures to show our methods of taking off honey. The methods are not ideal, but they are practical, and, therefore, may be of some value to beginners. I specially invite adverse criticism, for in that way I shall hope to get something out of it.

In Fig. 1 my partner, H. L. Parks, is seen just going into a hive. He had previously thrown the cover on the ground back of the hive, and set his empty super on it; and when the picture was taken he was in the act of stripping off the canvas inner cover with one hand, while with the other he was giving the bees the first smoking they receive during the operation. He seldom stops to smoke the entrance while taking off honey—he can't spare the time. If you should happen around to one of our yards when he is taking off honey in a hurry you might think he had lost something which he was in a desperate hurry to find. We shake most of our honey when taking it off, and the method used is exactly the same as that described by G. M. Doolittle as to the quick downward thrust followed by a jerk back; but it will be noticed, Fig. 3, that the frame is, at one end, held so it rubs up and down on the end wall of the hive. This is a very important point, for it enables the operator to shake all the bees back into the hive. The frame when held thus will not strike against anything, and the bees all fall back into the super, where most of them busy themselves crawling down into the brood-nest. The points of advantage are that a lot of time is saved over the method of shaking on the ground in front, and fewer queens lost. The first frame is usually taken out somewhere near the middle, where there is the best chance to shove the rest of the frames away on either side.

Just a word about that canvas inner cover, Fig. 1. Nothing will beat it for this country. The bees soon cover it with wax so it is water-tight, and thus it forms the sealed inner cover. With good 12-oz. canvas any kind of old board will do over the hive for a cover, and the bees will prosper; but the strongest point in its favor is that, in rapid work in taking off honey, it saves the operator about half the stings he would get with any kind of wooden inner cover, because it strips off without jarring the hive, and the smoke is on the bees before they get the "fight idea" in their heads. I say it saves half the stings when the operator is working fast. A slow operator can avoid stings with any kind of inner covers; but a fast operator gets stung more or less all the time; and when he is jerking off from 2000 to 2500 lbs. per hour, any contrivance which



FIG. 8.—Carrying a super of honey in such a way that the combs will not wound each other, and cause bleeding or leakage from them while they are stacked away for several hours.

will cut down the stings one half adds very materially to his comfort.

The brushing act shown in Fig. 4 is one we seldom practice when in a rush. If there are not more than two or three dozen bees left on a comb when it is shaken, in they go to find their way out the best they can through the bee-escapes at the top of the big screen windows in the honey-house. Fig. 5 shows the frame of honey being set down in the empty super in which it is to be taken to the honey-house. In Fig. 6 the bees are being shaken out of the super from which the honey has just been removed. The empty super is then taken to the next hive to receive the shaken combs there. In Fig. 7 the cover is being put back upside down to allow ventilation while all the bees are crowded into the brood-nest.

Some time last year a correspondent mentioned a method for taking off honey which kept about three operators busy at a hive. No doubt the work was beautifully done; but so far as quick work is concerned there was a great loss of time. A fast operator practically jerks the bees off a comb as he lifts it from the hive, and a trial will show any one that he can set a comb down quicker than he can get another person to take

it. In Figs. 2, 4, 5, the proper place for a smoker will be seen. In this position it is ready to use almost instantly, and it goes along with the operator when he moves about the hive or walks a few steps away to any other hive, for he soon learns to walk about with his smoker between his legs. If a bee-keeper should come to me and ask me for a job of taking off honey and I noticed that his overalls were all smoked and scorched between the knees I would say "yes" without asking him a single question.

ADVANTAGES IN GETTING A LOT OF HONEY TO THE HONEY-HOUSE AND STACKED UP BEFORE BEGINNING TO EXTRACT IT.

We notice that all the bee-keepers who come around our work seem surprised that we take off all the honey and all the supers from a hive when we go to extract it, and leave it that way until we get back with the supers full of empty combs. It seems to be

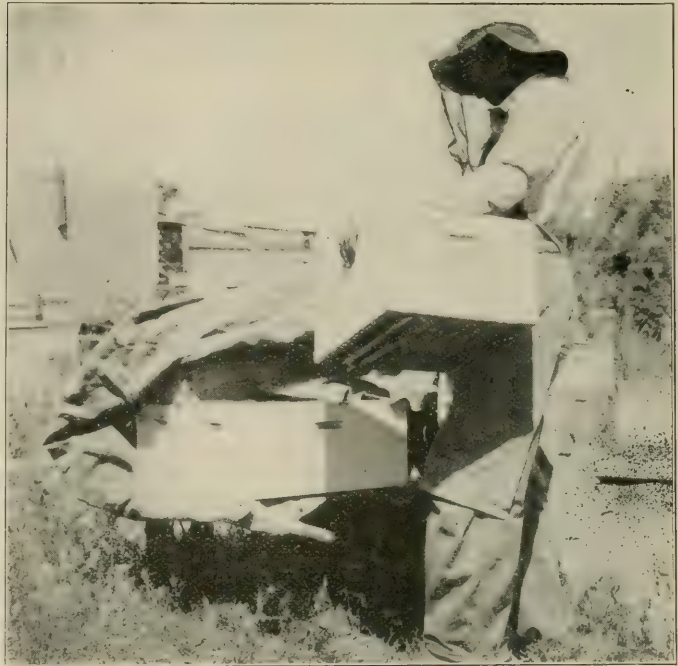


FIG. 9.—Throwing back the canvas to load another super on the wheelbarrow.

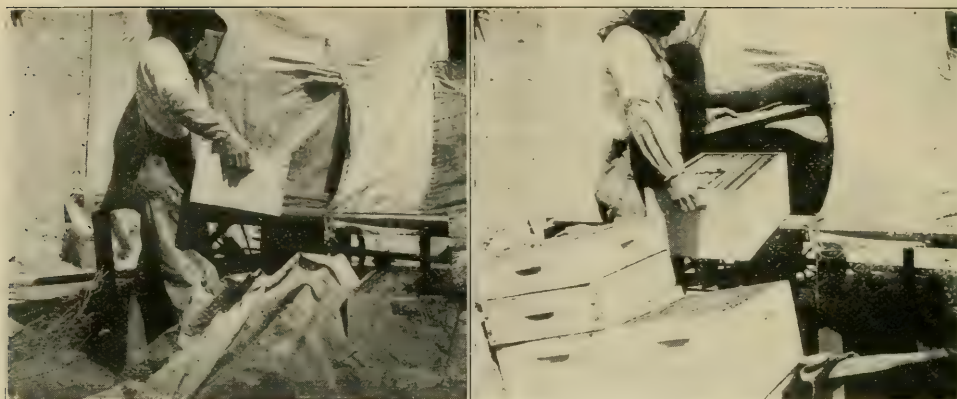
new to them. Now, if the method is new to most bee-keepers I wish to say that it is worth getting acquainted with. To go out into a yard and take off all the honey in it,

then extract it all, and finally put back all the combs in the supers they are to stay in, so greatly systematizes the work that the effect will please any one. A smaller crew can handle more honey, do it better, and with less robbing.

We have tried several ways of getting the honey to the house, and I believe that the common flat wheelbarrow is the best, except in times of the worst robbing, when each super should be carried in as it is taken off. If the supers are carried any distance they should be held with the end against the body, as shown in Fig. 8. Notice that the left hand is in such a position that the fingers can hold the combs from pounding against each other as they are carried. If the combs are allowed to pound or mash one another as they are being



FIG. 10.—Bound for the honey-house with a load of four full-depth supers and two shallow-frame supers.



FIGS. 11 and 12.—Passing the supers of honey through the canvas flap door of the extracting-tank.

carried into the house, some honey will be wasted by "bleeding" while the supers are stacked up. When the honey is wheeled in on the wheelbarrow, four or five full-depth seven-frame supers is our usual load; but a strong man can wheel more on good ground.

Figs. 11 and 12 show the operator passing honey in through the canvas flap door. One of the interesting things about this type of door is that, while it does not always hang right to close the door completely, the bees rob very little around it. Here is where the big screen windows come in handy in our honey-house. The bees go to the point of the strongest odor of honey, which is, of course, at the big screen windows. There is often a great whirl of robbers about these screen windows or screen sides while scarcely a bee will be bothering about the doors. The greatest advantage of the screens, however, is that they permit plenty of air. Our old tent with much smaller windows was so hot that we could scarcely stand it; but with the windows we have now we have not suffered at all from the heat this summer.

Mesilla Park, New Mexico.

BEE-KEEPING AS A HOBBY.

BY F. DUNDAS TODD.

Census reports show that three-quarters of a million people in this country are sufficiently interested in bees to keep at least one hive, the average being about four to each apiary. Most people will be rather surprised to learn that about one person in every hundred in the United States keeps bees; but should they ever catch the bee fever they will soon discover hives in yards near by where their presence was never suspected.

While there are, perhaps, a thousand men who depend upon raising honey as a means of livelihood, the vast majority are keeping bees for pleasure rather than for profit, contented to get a few hundred pounds of honey for family use. For many years the

writer's family has consumed 200 pounds of honey annually, in his opinion with highly satisfactory results, judging by the general health of the members. Honey is a predigested food, capable of rapid assimilation; better still, it is a natural laxative, deserving consideration from people of sedentary habits.

The average reader of the title of this chapter will, at the first glance, be tempted to move that it be amended by introducing the word "country" before the word "hobby." Bee-keeping as an occupation is undoubtedly a rural one, frequently very isolated, but it is just as often—nay, very much oftener—a city hobby, for in every one of our large cities there are men amusing themselves by caring for a few colonies of bees in back yards, on roofs of dwelling-houses—aye, even on the roofs of business blocks. The marvel frequently is, where do the industrious little insects get their food? But get it they do, usually with a surplus of delicious honey for the owner as a material gain that adds to the zest of the fascinating pastime. Any one within a mile and a half of a region where there are a few acres of clover or sweet clover, whether in the form of city park, vacant lots, or everyday unimproved streets, need have no hesitation in making a venture with a hive of bees with the full certainty that, from an investment of about twenty dollars, he will have not only a daily interest in living creatures, but once in a while a little mild excitement that will make him for the moment forget all his other troubles.

A hive of bees may be kept almost anywhere; but, of course, the most favorable location is out in the rural regions where flowers are in plenty. A hive is an attractive feature in the back yard, and, in the writer's experience, interferes in no way with its utility for other recreation. On a corner lot in a Chicago suburb he once kept four colonies near the back porch within 20 feet of the children's croquet ground, without any annoyance. Often a ball would roll in front of a hive and be fished out at

once in ordinary course without bother to either bees or children. Generally every day a dozen young folks would be playing about, but never one got stung.

Our honey-producing pets as a whole are not offensive, but they are adepts in defense. At present the writer has three dozen hives in a back yard in the residence part of a city of 40,000 inhabitants; but so far he has not had a single complaint from a neighbor. There is only one colony of wicked-tempered bees in the apiary, which will be eliminated at the first opportunity by replacing the present mother, generally known as the queen, by one raised from a gentler strain.

As has just been stated, the queen of the hive is, after all, merely the parent of the vast family. A bee-hive is a form of society in which there is apparently no government, no direction, no correction. Each inhabitant instinctively knows the right thing to do, and does it. Hence inside this magic chamber there is no immorality, no vice, no crime, consequently no rules, no government, and no overseers of any kind; and therein is the charm of a hive to the business man who needs a complete change of thought. It is not the little work essential to their welfare that makes bees a splendid hobby, because for weeks on end it is better for the bees if the hive be never touched; but it is the study of the social economy. At first there is the fascination that comes from watching the perpetual going and coming of its myriads—an attraction that tempts one to sit for hours in the

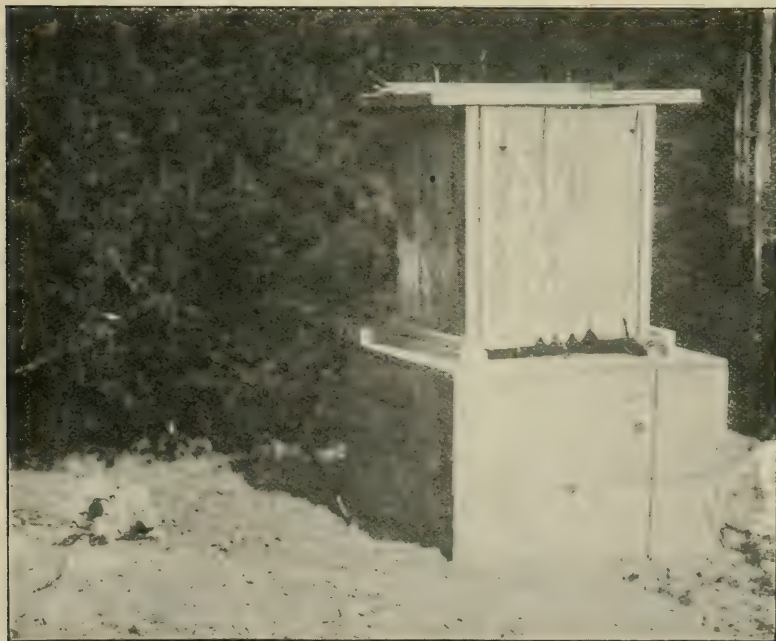
pleasant sunshine with eyes persistently fixed on the alighting-board, all other things being forgotten. Where do they go, what do they get, and how is it carried?

Then we are tempted out to the highways and byways, the open fields and clumps of woodland, to become acquainted with plants and flowers we never before heeded. We get literature to learn what others know, and are led to further observation on our own account. Lastly, we begin to appreciate the value of little differences, and so day by day we follow the changes that mark the progress of the bee year—the rapid increase of population in the spring; the development of the reproductive instinct, and its culmination by swarming; the advent of the honey-flow when nectar is so plentiful that the supply is far ahead of the daily needs, and so provision can be made for the long season of dearth by a wondrous system of storage; the ending of the season of plenty followed by a rapid shrinking of the population so that consumers may be few and not endanger the life of the colony by eating up the food supply when production is at a standstill.

It is hinted that some human beings, in their efforts to maintain a certain standard of living, are not averse to race suicide. In untoward seasons, especially in spring, the inmates of our hives are frequently face to face with collective starvation due to sudden stoppage of nectar, and at once they curtail consumption of food by child murder, mercilessly throwing out of doors every egg and undeveloped bee. Men may

die, but man must not, so bees must be sacrificed that the life of the colony may be perpetuated.

Enough has been said to indicate feebly the fascination a colony of bees has for its owner. The attraction is so great that, in the case of the average man, his hives are the first objects to be visited on his return home from business any day from the spring thaw until the late November frosts drive the bees into winter quarters. But there is a material side, minor in



A colony in a box hive which cost one dollar. This kind of thing had better be left alone by the beginner.



The penalty for buying a colony in a box hive: transferring it to a regular hive. The novice finds this a rather sloppy task with lots of stings as an incentive to haste.

importance to the true bee-lover, but major in the judgment of the multitude, and that is the production of honey—one of the most perfect foods consumed by human beings, undoubtedly their first sweet—one that, by those who understand, is partaken of as freely and as regularly as milk or jams. In some seasons the surplus honey of the hive available for human use is considerable; in others it is conspicuous by its absence; but taking the average of a series of years in almost every region of this continent, it amounts to 50 pounds, being excellent profit from a hobby that calls for moderate outlay of capital and very little labor.

The suburbanite who raises flowers and garden truck, or keeps chickens, has plenty of physical labor, generally gets some produce, but ordinarily has difficulty in showing an equivalent for labor and money expended. His profit is summed up in one word, "fresh;" that is, his household is benefited by fresh blossoms, fresh vegetables, and fresh eggs—doubtless all excellent things in themselves, as the writer knows by practical experience in both raising and using. But a bee-hive calls for little labor, and is interesting; once in a while when the bee-keeper is foolish it will give him a little run for his money; for even "heavy

weights" will sprint a hundred feet in almost record time when paced by a dozen bees anxious to make acquaintance with some specially tender spot in his anatomy; but it will, one year with another, pay at least 30 per cent on the outlay, and, with skillful management, nearer 100 per cent. Stings are not a necessary part of the returns; in fact, the writer as a beginner easily got more in the first week's ownership of his first hive than he now gets in a whole year from three dozen.

In most regions the best time to begin bee-keeping is in the end of April or beginning of May. Not only is it near the commencement of the honey-flow, which in most settled communities is from clover in June, but the risk of loss is at the minimum. Some years many

colonies die in winter or early spring, so that there is a certain amount of risk in buying after the honey season is past, and therefore it is well worth while to pay double autumn price in May for a colony in good condition, rather than pay half spring price in October. Then, if there be no objection to increase, one can usually trust for expansion by swarming, but each swarm will be compensated for by less surplus honey.

The beginner should buy only one hive, for one box of tricks is enough for any novice. If you wish to understand bees you will learn as much in the first year from one hive as from twenty; while if you let them run themselves your financial loss will be at a minimum. Bees are a kind of stock that require attention just like chickens, sheep, or cattle—not so frequently nor so regularly, by any means; but at certain times they may need assistance, which must be given at once and in full measure if the life of the colony is to be preserved. The man who can not take care of one colony and its increase for one year is lucky to learn his inability at small cost. It is, therefore, wise for the beginner in bee-keeping to start with only one colony; and after the first season to invest in increase only such money as the bees have actually earned.



FIG. 1.—Mr. Hand and Miss Fowls discussing his new scheme of swarm control.

The first colony should, if possible, be $16\frac{1}{4}$ inches wide, and $9\frac{1}{2}$ inches deep, outside measurements. This is the one to choose. who makes a business of raising honey for Last of all, if possible, when purchasing, the market rather than an amateur who plays with a few hives, because the apiarist is more likely to have a strain of first-class workers. There are big differences in bees as in other animals, and the professional bee-keeper is compelled to eliminate the inefficient to make his occupation pay. As a class, bee-keepers are very honorable men whose word may be relied upon — rather free than otherwise in explaining the mysteries of their calling.

Do not be tempted to buy a colony housed in a soap-box or similar makeshift, but see that you get a modern hive in good physical condition, free from cracks and loose joints. There have been fashions in hives as in other lines of industry; but the bee-keeping world has, as a whole, settled down to one length and depth, using what is known as the Langstroth frame. Now, it is important to have all frames interchangeable, and therefore the beginner should avoid out-of-date, odd-shaped sizes. A ten-frame modern hive is 20 inches long,



FIG. 3.—“The proof of the pudding” of the Hand system.

make the bargain to include the delivery of the hive and placing it in position, and by this little bit of sagacity you will escape 75 per cent of the stings you are liable to get the first season. Herein the writer speaks out of the fullness of his experience, for his first investment was a derelict colony left behind by a neighbor who had gone out west. The purchase led him into a peck of interesting troubles, the first consignment of which was delivered by about one million bees on his ten fingers in one second—at least it looked that way. He is perfectly certain about the number of fingers, but did not take time to count the bees or the seconds.

Let us see the cost of a little venture in

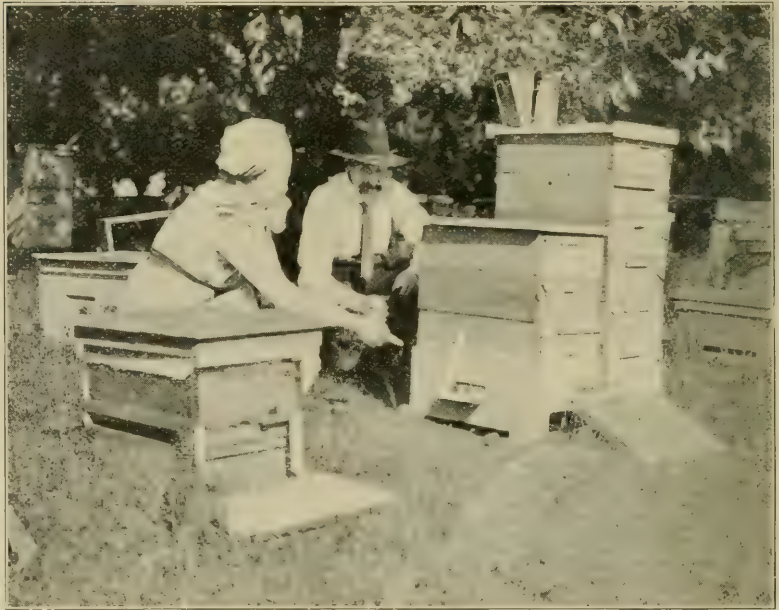


FIG. 2.—"What is that side entrance for, Mr. Hand?"

amateur bee-keeping, stating the actual necessities for the first year, not quoting the lowest prices possible, but those taken from the catalog of a large and long-established factory with a reputation above suspicion.

Colony in ten-frame hive (in spring).....	\$13.00
(Note, cost in fall would be \$10.)	
2 comb-honey supers, complete..	3.40
1 smoker.....	.85
1 bee-veil.....	.60
1 pair bee-gloves.....	.50
1 instruction-book.....	1.25

\$19.60

Extra expense probable in average year.

1 new hive for swarm, all complete.....	\$3.30
Extra sections and foundation..	1.00

\$4.30

In all likelihood the first colony, if bought locally, will cost less by a few dollars than the price quoted. The first year's outlay should not be allowed to exceed \$30.00, of which sum all above \$22.00 or \$23.00 will be for new hive-bodies as a consequence of uncontrolled swarming. After the first year's investment, unless some very exceptional condition arises, the bees must keep themselves, and no expansion should be attempted unless the cash for the hives has been earned by the insects.

The source of revenue is, of course, comb honey. In an average year the production



FIG. 4.—The Hand feeder drawer.

will be about fifty sections; in a poor year, nothing; in a first-class season, one hundred or even more. The writer started out in a poor year, got two swarms and fourteen sections of honey. In the spring of the second year his three colonies were safe and sound, and by a little knowledge and luck he managed to avoid swarming; then he was fortunate enough to pick up a stray swarm that somebody had failed to keep track of. The season was said to be below the average, and he got from the three original hives 45 lbs. of chunk honey and 267 sections, worth locally over \$60.00. There was thus returned all the cash that had been invested, and four hives were still in existence.

So far for the rosy side of the shield; and now it is but fair to show the obverse. In a new locality the writer bought 9 hives; increased to 21, getting 75 lbs. of honey. It was a poor season; but the winter was worse, the average apiary in the locality losing 60 per cent of the colonies, the writer's included. The summer following was a complete failure. This happened in a region where, up to that date, a honey-dearth had been unknown for over a dozen years. This is why it is advisable for a beginner to limit his first season's investment to about \$20.00, and make all future expansion out of income—of course crediting the bees with all honey consumed at home at regular market prices.

The location of the bees in the yard is important. First see that it is sheltered from cold winds in the spring months; hence in most regions it should be shielded on the north by a fence, clump of shrubs, or house or barn. On the other hand, in the summer months there must be a free circulation of air all around, therefore the hive must be at least six feet from the fence or building. The position of the entrance is not really important, but it generally faces the south so that the sun's rays in spring will send warm air into the entrance; while as the end of the hive warms up, the heat will circulate between the frames. When the doorway faces east or west the noonday sun heats up a side, warming up the comb next to it, but not affecting in any way the middle frames on which the bees are apt to be clustered.

The hive must not rest on the ground, as the moisture will rot the bottom-board. A stand in the form of a table a foot or so high looks rather well; but a couple of pieces of 2×4 lumber, or 4×4, laid flat on the ground, will be just as good so far as utility is concerned.

Victoria, B. C.

J. E. HAND'S SYSTEM OF SWARM CONTROL.

The "Proof of the Pudding."

BY E. R. ROOT.

On pages 679, 692, 693, 719, and 755, the J. E. Hand system of swarm control by means of a switch lever and a double bottom-board

was illustrated and described. To refresh the memory of the readers we may say that the scheme consists of a double-width bottom-board large enough to take two hives side by side. There is an entrance on all four sides of this double bottom that can be manipulated in such a way as to throw the working force preparing to swarm from one hive on one side of the board, to the hive opposite. This trick is accomplished by the simple manipulation of a switch lever or gate.

When Mr. Hand first presented his scheme to us, a year ago, it looked good. We said, however, that we would like to see it in actual operation, and, accordingly, last summer we availed ourselves of the opportunity to visit his apiary at Birmingham, Ohio. On the day of our call we drove over, stopping on the way at Mr. Fowls' apiary, picked up Miss Fowls, who, after our description, was anxious to see the plan in actual operation. We tried to get a picture of her standing before one of the stacked-up hives, but succeeded only in catching her with her back to us. She had not forgotten that, a couple of years ago when we showed her picture in *GLEANINGS*, a number of single bee-keepers desired to correspond with her. The other members of her family have been "having the laugh on her" ever since. It will be noticed in two of the views, pp. 795, '6, that she is discussing with Mr. Hand this system. She was, in fact, entirely ignorant of what the camera was doing. Fortunately, we caught both of them in animated discussion over the new system. Mr. Hand's face shows plainly enough. If any of our subscribers desire to "correspond" with him they have our permission.

In brief, the plan of swarm control is this: When No. 1 on one side of the bottom-board arrives at a swarming pitch, the upper story with its extracting-combs is placed on the other side of the bottom-board hereafter designated as No. 2. The supers of No. 1 are then placed on top of No. 2 with a queen-excluder between it and the extracting or brood combs beneath. The switch lever is shifted over, forcing all the flying bees of No. 1 preparing to swarm into No. 2 in which there is very little brood, a lot of honey in the brood-nest, which must be carried above to make room for the queen to lay in. The flying bees immediately go on storing in the same set of supers on which they worked in the other hive. When this flying-bee colony or No. 2 arrives somewhere near the swarming-pitch, its flying bees and its supers are switched back to the first hive; but usually one shift, says Mr. Hand, is sufficient to break up the swarming fever for the entire season. The auxiliary entrances on each end of the bottom-board (see page 692, Nov. 1, and pages 795 and 796, this issue), are used only when both of the switch-lever entrances are closed against the one colony. Without the auxiliary entrances there would be no chance for the fresh infusion of hatching bees to be transferred over to the colony that is storing honey.

So far Mr. Hand feels that his plan of

swarm control is a success. Whether it will continue to show up as well in the hands of others, remains to be proven. The illustrations are a fair sample of the hives in the yard manipulated on that plan. The taller of the pair of hives in each case is the one that has received a shift of flying bees and the supers from the shorter one. The latter in the mean time has been put into an impoverished condition to cause it to destroy its cells and hatch out its brood. When this hatched brood is of flying age it is shifted to the other hive. If, however, the tall hive is preparing to swarm, its force of fielders is shifted into the hive of the newly hatched brood. The two forces of bees are then ready to do business in the supers that have been again transferred over.

Mr. Hand felt that he had solved the problem of swarm control, and, as an evidence, he pointed to the stacked-up supers on top of colonies that had never swarmed. They had nothing to do but fill super after super with fancy comb honey.

Some years ago, as our older readers will remember, the writer tried what was known as the Sibbald method of swarm control at one of our outyards. This plan had the same basic principle, but was not as convenient to work. The Sibbald scheme involved the idea of having the colonies arranged in pairs, one very much stronger than the other. When the stronger colony began to show evidence of its intention to swarm, it was shifted over to the place occupied by the weaker one, and the weaker placed on its stand. The supers on the strong colony were then given to the weak one. Theoretically, all of the flying bees would go to the old stand; the cells that were built in the colony preparing to swarm would be destroyed because it would be robbed of all its flying bees. But the scheme worked only partially. Some strains of bees would go back to their old stand in spite of the change of position. Right here Mr. Hand makes a decided improvement in the fact that in the switch-lever bottom-board he makes this absolutely impossible. After the shift of the switch lever the bees go back to precisely the same alighting-board that they did before, but they are *compelled* by the gate or valve arrangement, so to speak, to go into the other hive, whether they will or not. Here they find that there are no cells started, very little of brood, and, as they will not be likely to swarm without conditions being favorable to swarming in the way of swarming-cells and a congested brood-nest, they will go on storing in the supers.

A feature of the arrangement is that it allows the bee-keeper to use his old hives and equipment, the only change necessary being the switch bottom-board, which, we understand, is being made the subject of a patent.

In two of the illustrations, one particularly, Fig. 4 (p. 796), will be noticed a sliding-drawer arrangement under one of the hives. This is nothing more nor less than a feeder. It is pulled out for the purpose of filling with

syrup, and when once filled it is pushed back as shown in Fig. 3, p. 795. The feeding-trough is fitted into a shallow rim that rests under the brood-nest proper. In feeding back, Mr. Hand has used this kind of feeder, because, he says, he finds it much more satisfactory to place the feed *beneath* the brood-nest rather than on top.

It will be noticed, also, that our friend is using shallow brood-chambers. While he preferred these with his old system, he now says that with his new system full-depth bodies or Langstroth depth will give as good results as the shallow brood-chambers.

AIKEN'S HONEY-WAGON.

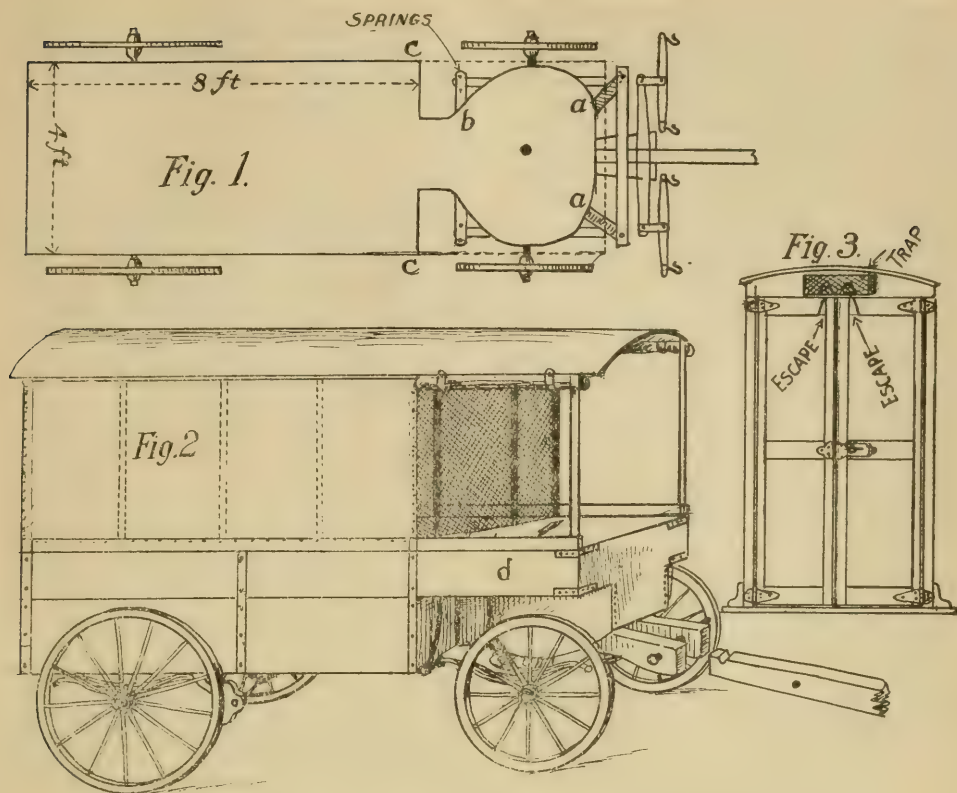
BY R. C. AIKEN.

If you do not have what you want, just make it. It often takes some thinking to devise short cuts; but if one never tries he is not likely to find them out unless some one tells him. I am decidedly in favor of independent thinking, but not the kind that makes one think there is nothing good except what he himself devises.

I have used my bee-wagon for a number of years, and have long intended to write something about it; therefore I can not be accused of rushing a new and untried apparatus before the public. It was built originally in 1896; but I rebuilt it a few years ago, and then made an entirely new wagon this past year, the box being 12 ft. long and 4 wide. In a bee and honey wagon it is necessary to have as wide a box as will go between the wheels in order to get all the possible room on the floor, and this means that the rear wheels must be high and the front ones low, or else some other provision made so that the wagon can be turned around in a small space. It is very important to have the box low for ease in loading and unloading, and also in order that the roof will not be so high above the wheels as to make the affair top heavy if enough space is allowed for a man to walk under it.

Fig. 1 shows the floor plan of the wagon, especially the circular part in front, which allows the wagon to turn around in almost as small a space as a dray, even though it is long-coupled. The wagon is equipped with full platform springs with no reach or coupling-pole, the springs and gear all being fastened to the box as in all ordinary full-platform-style spring wagons. The double-tree is attached to the gear, and the pole is a slip style, so that, by drawing a bolt, it can be quickly removed, leaving the double-tree always with the gear. This is a convenient arrangement, for, when the wagon is housed, the pole can be removed and put in it or under it.

Fig. 2 is a front and side view showing that the box is made square and full width in front, though still allowing the front wheels to turn under it. This cut-under plan is the peculiar feature that attracts attention everywhere I go. The curved part



AIKEN'S HONEY-WAGON.

from A to B, Fig. 1, is made of sheet metal. I used No. 16 galvanized iron, making two pieces by cutting in two a sheet 3 ft. wide. These metal pieces readily bend around the circle and give great strength to support the weight that comes over the front axle. The part from C to A may be made of metal or of wood.

The side board D, Fig. 2, is bolted fast to the circular sheet iron just over the front axle. As the iron recedes inward from each side, spaces are left into which boards are fitted and securely fastened to both the side board D and the iron, thus forming a shelf or ledge on each side on which the seat rests. The seat may be detachable or stationary. After trying both ways I prefer the detachable seat. In one of my wagons the front wheels are 38 inches high and the rear ones 42; in the other, 36 and 38 inches respectively. Of course, lower wheels would be all right. To get in at the front I climb up over the doubletree, using the hound or gear for a step. This would not be quite suitable for a common passenger wagon, but is all right for a business affair.

Another special feature of this wagon is the back end, which is shown in Fig. 3. Note that the vehicle has a back cover, and that the sides are canvased in tight up to the part cut under for the front wheels. Just behind the seat is a curtain which may

be let down, closing the front end of the box, and at the back are two screen doors, which, when closed, make a bee-tight compartment. The reason for having *two* doors is that, when a door is only half as wide as the opening, a slight racking of the door-frame out of square will not leave a crack large enough for bees to pass. Moreover, when the doors are open they do not swing out far enough to be in the way. A catch at the top holds one door and the other one latches on to it.

Over the doors is a box used as a trap, each door being provided with an escape-hole at the top that lets the bees up through a cone into this box, which is just a plain wooden affair with a wire front. It is made detachable from the wagon so it can be taken down in a moment. When moving colonies of bees, if a leak occurs those that take wing and fly to the door are soon caught in the box; or, when taking off supers, if a few bees are left on the combs when put in the wagon they are soon trapped, as are also any robbers that get in. Without trying such a device as this, no one realizes what a lot of trouble it saves. I have put leaky hives in a wagon without making any attempt at closing them. I move right along and there is no trouble from flying bees. Most people would be surprised at the comparatively few bees that take wing when left open in the

wagon, *provided* they have been smoked or alarmed before being loaded. If a start is made soon after they are thus subdued they are all right. If the hives have stood for some time, and the bees have recovered from the smoking, they may be simply smoked again and there will be no trouble.

When reaching destination I remove the trap and put the bees that have accumulated in it anywhere I wish, giving them a queen, and thus making a nucleus colony. This same trap I use on honey-house doors and windows.

A few days ago I went into my wax-house in which I had left some combs of honey, and found that yellow-jackets were doing a rushing business. These little rascals will find their way where bees will not; but in going out they make for the nearest well-lighted door or window. I found that most of them were going out at a screen that had a cone outlet on it. I adjusted the trap box over that cone escape, and in less than one day had most of the yellow-jackets, and at the end of a week there were scarcely any of them around.

If one has never tried such a wagon as I have described, he will have little idea of the value of it when moving bees or when taking off honey. If a hive leaks, one can drive on or stop just as desired. When taking off supers I just put them in the wagon and they are safe from robbers.

Loveland, Colo.

BEE-KEEPING AS AN AID TO HEALTH.

Another Testimony to its Value; Stings Especially are Beneficial.

BY W. A. DUNTON, M. D.

Last February I had a severe attack of rheumatism which at first affected the muscles of the whole body, and soon attacked the heart itself, causing severe inflammation of that organ, or, as doctors say, myocarditis. The pain in my heart was sharp at times, with a dull pain always, and, on deep pressure, extreme tenderness. The action of the heart was so much interfered with that I was cold day and night in spite of four shirts worn constantly. A bath of tepid water seemed unbearably hot, so cold was the surface of my body. I suffered so much with cardiac asthma that some days I was unable to attend to my patients, and in my gaspings for breath I felt as though I were breathing with my heart, as that organ rose and fell with each respiration; and on those days it was only with the greatest difficulty that I could so much as walk. All these symptoms were made worse by eating strawberries or any other form of acid.

I tried all the best remedies known to medicine, but without relief. Any physi-

cian reading this will say at once, "Indigestion and faulty assimilation." True. The rheumatism was evidently caused by an excess of acids and toxins in the blood from faulty assimilation and poor digestion. I lost 11 lbs. in weight, and was pale and haggard.

Having practiced medicine for 18 years I hated to drop it and go to a place hotter than Southern California, or, perhaps, after partial recovery, go into some other business; but as I knew that my time on earth was likely to be short if my condition did not quickly improve, and knowing that sunshine and pure air would bring back my health if any thing could, I thought of bee-keeping.

I bought 46 colonies of bees near Los Angeles, in every imaginable kind of hive, and some in no hives at all, and went to work with them. It was early in the season; and as there was but little for the bees to eat they were savage, and stung me severely. From the first, improvement in my condition was marked. I threw away my veil and gloves, and took the stings in heroic doses. On one occasion I let them sting until I was nauseated. I have noticed the same effect on others. One day I had an eye closed, and my hands looked like twin toads.

The sharp pains entirely disappeared after the third or fourth large dose—from 30 to 40 stings at a time—and inside of one month all soreness went away. My good color returned, and I was cured. The chief symptoms noticed from the stings were heat, both local and general; itching, tingling, and formication—a feeling as of ants crawling over the skin—lasting for hours after a large dose, giving rise the next day to a feeling of added strength and vigor difficult to describe. The sweat poured off in rivulets, where before the skin was cold and clammy. My weight increased to my normal, 150 lbs., and my friends noticed my improved condition. I could eat acid foods without harm, and my appetite improved from the first.

I have not become entirely immune to the poison, although I am partially so. The pain of the entering sting is about the same as at first; but the local after-effects are much less, and the general effects almost *nil*.

For the benefit of physicians I will state that the poison of the bee is *not* formic acid, as has been stated by some observers, but an altogether different substance. If any one wants to experiment with formic acid obtained from an insect or other living creature he must obtain it from formica (the ant) and not from the bee.

The taste of bee-sting poison is pungent, but has not the sorrel-like sourness of that from the ant.

I have often tasted and smelled of both; and if the acid of the ant is formic acid, then the poison of the bee most decidedly is not.

Los Angeles, Cal.

Heads of Grain

from Different Fields

What is the Matter with the Bee-cellar? when Dampness does Harm.

Will you help me out by answering a few questions in regard to my bee-cellar? I have wintered in it twice, and I think it is too cold and damp. My cellar is 8 by 12, by 7 feet high, under ground, built up with loose stone covered with cedar posts, with two feet of dirt over a slanting roof. It stands on the east side of a piece of timber land, and in a side hill. The fact that it is close to the woods is what makes it damp, I think. It has a good drain laid with tile, but it gets quite damp toward spring. Here are the questions:

1. Does it need ventilation? How much?
2. Shall I leave on the bottoms of the hives?
3. Shall I leave on the covers with burlap or enamel cloth?

My bees are in twelve-frame hives, all Italians.
Mohawk, N. Y. CHAS. P. BROWN.

[In your description of your bee-cellar you state that the roof is covered with two feet of earth; but you do not say whether this earth has a roof over it. Without it, it would become water-soaked from rain and snow, and most of the time it would freeze up, and at other times it would thaw and let the water through into the cellar. The two-foot covering of earth should be covered again with a roof of its own.]

The proximity of the woods to your cellar would have nothing to do with the dampness. The lining inside of the cellar, of matched ceiling, would probably have no effect one way or the other, except, perhaps, to make the cellar a little warmer.

One thing is sure: There is a lack of ventilation unless your climate is continuously cold for at least three months during mid-winter. When we say "continuously cold" we mean anywhere from 5 to 10 degrees below freezing for two or three months steady. The outside temperature must be cold enough so the inside of the cellar will never go above 50° F. On the other hand, it should never go below 40°. If you can maintain a temperature of not lower than 40° and not higher than 50°, you may be able to be get along without much ventilation. In any event we would have a sub-earth ventilator, a glazed tile 8 in. in diameter, the joints made water-tight with cement. This should run 25 or 30 ft. away from the cellar, and then come to the surface. Be careful that this ventilator be tight so as not to carry water into the cellar. There should be a similar opening up through the roof. During very cold weather this ventilator should be closed from the outside. It will probably be unnecessary to use it except during moderate weather.

In your case, as the cellar is already built we would advise opening the doors at night and closing them in the morning during warm weather, or any time when the bees are noisy and flying out on the cellar bottom. If the cellar gets too warm inside, much above 50°, you will lose many bees on account of their flying out of their hives. In such cases the only thing to do is to give copious ventilation. For that purpose we know of nothing better than a sub-earth ventilator.

The dampness you speak of in your cellar will do no harm providing the temperature does not go below 40°. Some fine results have been secured in cellars reeking with dampness when the temperature was under control. The only time, apparently, when it does serious harm is when the cellar becomes too cold. Dampness and cold make a bad combination in any bee-cellar; but dampness alone is not necessarily hurtful.—ED.]

A New Kind of Bees instead of Robbers.

On page 635, Oct. 1, you are wrong in your conclusions: at least some bees that I am troubled with are not robbers, for they belong to another class, as they are smaller and different in color. They pounced in on two of my colonies for over two months; and although my bees killed large numbers of them they still kept coming. There was a two-weeks' honey-flow during the time, but

it made no difference to these strange bees, as they came just the same. They certainly do not seem to be robbers, as they have the appearance of only wanting to find a home. There are a great many of them living in some of the hives now and can be found on the brood-combs any time, seemingly as quiet and contented as the regular bees. My bees killed them when they were strange; but when a large number of them get into the hive and acquire the odor they stay. Where they come from is a mystery to me. Who can tell?
Joplin, Mo. C. W. POWELL.

[Perhaps some of our subscribers who have observed the same thing can throw a little light on this. Before we determine what these insects are, we should have to have a dead specimen sent by mail. Prof. A. J. Cook, of Pomona College, California; Prof. H. A. Surface, State Entomologist of Pennsylvania, Harrisburg, or Dr. E. F. Phillips, of the Bureau of Entomology, Washington, D. C., could doubtless determine from the specimen sent what it was. In the meantime we suggest that our correspondent secure some specimens and send them in.—ED.]

Ordinary Sawdust Not as Good for Packing as Looser Material Like Planer-shavings or Leaves.

I have been greatly interested in your articles lately on absorbent and sealed covers. Could you tell me whether the following scheme is practicable? I planned to substitute for the regular cover a frame of pieces of wood one inch square, covered with a double layer of burlap tightly stretched. To prevent this from sagging I would nail on three or four cross-pieces. Then the bees would be packed in their winter casing. The space of three or four inches between the hive and sides of the casing would be filled with sawdust, five inches of this material to be put on top of the burlap-covered frame. Is this enough protection? The thermometer often goes down to zero. How big an opening would the bees so packed require for ventilation? Would the sawdust become too damp before the next spring when the hives could be taken out?

Haddam, Conn., Oct. 15. BERTHOUD BOULTON.

[Your scheme of winter packing we think would be all right; but instead of using so heavy a material as sawdust we would use something lighter and more of it. Sawdust is a little dense, and we should be afraid that in your climate it would become damp, especially if you use a burlap cover. It would be our judgment that it would be better for you to put on a tight board cover in place of the burlap, and then put on top about six or eight inches of loose packing material like wheat or oat chaff, planer shavings, leaves, or something of the sort.—ED.]

Wintering with a Super of Empty Sections over the Brood nest.

In preparing colonies for winter, is it a good plan to put a comb-honey super, filled with sections, on top of the brood-nest, and over this a super filled with chaff? or would it be better to leave off the super of sections? One of my neighbors here advises it; but it would seem to me better to leave it off, using only the super of chaff with a Hill device under it.

Orwigsburg, Pa.

S. A. RIGEL.

[Your neighbor's idea of putting on the super of empty sections was probably to afford a clustering-space for the bees; but we think that he would find some such arrangement as the Hill device much better. A space for clustering is all right; but too much of it would not be satisfactory, as the bees would only have that much extra space to keep warm.—ED.]

Artificial Bee-bread.

Will you please mail me a formula for making artificial bee-bread, or pollen, so that I can keep my bees rearing brood until late in the season?

Eldorado, Ok., Nov. 5.

W. R. WARD.

[There is no formula for making artificial bee-bread. Meal or bran—preferably meal from peas or beans—makes a very fair substitute. Ground rye is very often used. The meal is spread out in trays in a sheltered location as soon as the bees can fly. We have tried giving the meal in the hives, but never observed that the bees took much of it. They

will take it very readily outdoors, however, after they are once started, if it is put in a sheltered location. There are some early springs when the bees actually suffer from the lack of nitrogenous food. At such times they will hunt over feed-stalls, chicken-coops, anywhere and everywhere that they can get any thing that will serve the purpose of pollen in rearing brood.—ED.]

Why do Bees Dread Smoke?

The various opinions that have recently appeared as to why bees dread smoke are interesting, and some of them are amusing as well. I have no theory to offer as to why it is that bees may be thrown into a state of hopeless confusion by blowing a little smoke into the hive, but am satisfied of one thing at least—that heredity has nothing whatever to do with it. On various occasions I have given a live-bee demonstration in connection with a public lecture on bees. In every instance I have taken pains to explain in detail the movements necessary to bring a colony of bees under perfect control, and have usually ended by turning a panful of the insects over my bare head to illustrate the demoralized condition of the colony. Not long ago I took occasion to say to a large audience of teachers that I would not hesitate to try the same experiment with bumble-bees as well. It was freely suggested by friends who were familiar with the bee demonstration that the thing would not work with bumble-bees, and that for once I would get the worst of it. The opportunity to try was not long in coming, and a lot of bumble-bees that had made things so lively for others as to clear the field was brought to my attention. When put to the real test there was some lingering doubt in my mind whether, after all, it was not a risky thing; but there was no way to know but to try, and try we did. Without any protection excepting a loaded smoker we approached the nest. A brother bent on getting all the fun possible out of the experiment gave the bumbles a stir before we were prepared for business. The protest that came forth in the way of a buzzing declaration of war gave evidence that it was time to begin. The first bumble-bee to reach daylight was greeted with a puff of smoke that instantly made him forget he was looking for trouble. Several puffs of smoke were then blown into the nest, and the smoker laid aside. The nest was then taken apart and the combs held in the hand. The bumble-bees were apparently affected exactly as are the honey-bees under similar circumstances. Some of them buzzed about and alighted upon my clothing; others climbed over my hands, but not an individual in the lot showed the least inclination to sting. It is very evident that heredity played no part in the taming of the bumble-bees, for their ancestors, probably, were never smoked. It is very apparent, on the other hand, that the same influence is felt by both the honey bees and the bumble-bees.

I am now awaiting an opportunity to try the same experiment with some of the carnivorous wasps, like the bald-faced hornet, to see whether they will be affected in the same way or whether the smoke is valuable only in subduing the honey-gatherers. I have also in mind similar experiments with some other insects like an ant community to see whether, under the influence of a little smoke, they would stand idly by and see their formicary broken up without protest.

Atlantic, Iowa.

FRANK C. PELLET.

[Our correspondent is a lecturer of some note on various nature topics, including bees especially. He has given bee demonstrations many times; and, judging from the press notices on his circular, these attract more than ordinary interest.]

Some have expressed the opinion that the bees' instinct to fill up with honey at the smell of smoke is handed down from generation to generation on account of the necessity of changing location at the approach of a forest fire. For instance, see the discussion by G. W. Bullamore, page 787.—ED.]

Odor from Goldenrod Honey.

In your answer to F. D. Miller, page 670, Oct. 15, I guess you are wrong. I think the odor is from goldenrod honey. My bees have gathered lots of it this fall, and at times the odor has been most offensive to neighbors.

Barre, Vt., Oct. 19.

H. WILLIAM SCOTT.

Keeping Entrances Free from Snow.

In this section, as a rule we leave our bees out in winter, and we have to be careful that the snow does not fill up the entrance and exclude the air. Is there any contrivance to prevent the snow from filling up the entrance-opening? I have a shed with the west side boarded up and covered for my bees, but the snow will drift in and around the hives. I have only about 25 colonies; but it is a good deal of trouble to keep the snow away in a stormy time.

Goodland, Ind., Oct. 3.

DR. M. L. HUMSTON.

[It is a rather difficult matter to attach any thing to the entrance of a hive to keep it from getting stopped up with snow. Such device is almost always more of an objection than a help. Perhaps you might use absorbent cushions instead of sealed covers; and then if the entrances do get closed your bees will not smother. Ordinary packed snow gives no trouble, although if there is continual thawing and freezing, so that the entrances get clogged with ice, it is best to clean them out.—ED.]

One Thousand Pounds of Sugar Fed Between Fruit-bloom and Clover.

At the National convention at Albany, Mr. J. A. Green told how he made a big gain by feeding 1000 lbs. of sugar between fruit-bloom and clover. Do you think he did this for stimulating purposes, or because the colonies really needed the stores? Our fruit-bloom lasts until about June 1. It seems to me that this would be a little late for the best results. Bees from eggs after June 1 would hardly be honey-gatherers for clover, although they would be all right for basswood. Please give me your opinion as to Mr. Green's object. I have written to him, but so far have received no reply.

Oswego, N. Y.

F. H. CYRENIUS.

[We would take it that Mr. Green had in mind stimulating brood-rearing, and filling the brood-nest (that was not occupied with brood) with sealed stores and sugar syrup. In this way when he came to the honey harvest the honey itself would necessarily have to go into the supers. In this way he could get all the honey from the fields into marketable shape instead of some of it in the brood-nest and some of it in young bees and brood. Syrup is far cheaper than honey; and when it is possible to trade syrup for honey we are making a good business deal.

You will remember this same general plan was advocated by Mr. H. R. Boardman some ten or twelve years ago. At the time, it was called the Boardman plan of feeding to get more honey. The objection raised to it at the time was that the bees would carry some of this sugar syrup into the supers; but if feeding were discontinued in time, and the sugar stores were sealed, there would be no danger.

If we have not properly interpreted Mr. Green's idea he will be given an opportunity to explain it himself.—ED.]

Sweet Clover; Liming the Ground, etc.

I notice on page 421, July 1, a comment on yellow sweet clover sown in November, 1908, that bloomed in June, 1909. This prompts me to tell of my experience. I have been trying for years to get white sweet clover to grow on some acid land, but with poor success. Judging from something I saw in print, that the yellow clover might take more kindly to the acid land, I bought some of you last winter and mixed it with seed of the white kind of my home growing. This mixture was sown after Jan. 1 on two fields of poor clay soil, which, however, I had limed at the rate of 1000 lbs. and 500 lbs. per acre. The seed came up fairly well; and, examining the plots on June 27, I found a large number of blossoms on the yellow sweet clover. Of course, I do not know whether they all bloomed. There are several plants not blooming, but they may all be of the white kind. I should add, however, that this yellow sweet clover in bloom was from three to six inches high only.

D. W. TAYLOR,

Naval Constructor, U. S. N.

Washington, D. C., July, 1910.

Our Homes

By A. I. Root

Give thanks unto the Lord, call upon his name, make known his deeds among the people.—I. CHRON. 16:8.

O give thanks unto the Lord; for he is good; for his mercy endureth for ever.—I. CHRON. 16:34.

Our Lord Jesus Christ was a son of David; and in reading over this 16th chapter of I. Chronicles I was wondering if I too were not "a son of David." Of this I feel sure, that David and I have many feelings in common. Day after to-morrow is Thanksgiving day, and it is, therefore, quite proper and natural that I should think of "giving thanks unto the Lord;" but there is one particular reason why I feel thankful this bright morning, for I have great faith that I have made one more "great discovery," and a discovery that may ultimately prove of much benefit to the children of men.

You may remember that I have several times, as the seasons came around, spoken of how much I enjoyed chestnuts, and how beneficial they seemed to my health. This season they were so scarce and high-priced it seemed almost extravagant to enjoy my favorite nuts. I think I paid 40 cts. a quart for the first; but I afterward received four quarts for a dollar—nice ones—and a dollar's worth were brought down here to Florida. When they were almost gone I told Mrs. Root I still considered them (roasted chestnuts) the most delicious food God had ever given mankind, and that I should feel very much lost when they were gone. Now right here I want to make a considerable digression. Some time last winter I saw the following in Crenshaw Brothers' (Tampa, Fla.) seed catalog:

CHUFAS.

In the light gray sandy soils of our State, unaided by fertilizers, with fair cultivation on land that will not produce from 5 to 10 bu. of corn per acre, chufas will mature 50 to 100 bushels, with but half the cultivation that corn requires. They are an excellent hog food. Chickens and turkeys are also especially fond of them, so that a crop, when grown, can be fed both to poultry and hogs. The flesh of the chufa is especially juicy and delicious. Chufas can be planted from March to July, and a crop made. Plant in 3-ft. rows, 1 to 2 seeds 18 in. apart. It requires about one peck per acre. Qt., 20 cts.; peck, \$1.25; bushel, \$4.00.

Before taking up the chufas as indicated above, please pardon me for making *still another* digression. I am writing this Home Paper with (perhaps for the first time in nearly thirty years) an up-to-date typewriter. In my first letter home I said, "Please excuse bad spelling and mistakes," not because I did not *know* how to spell and punctuate, but because the new "contrivance" would not *say* just what I *meant* to say. Now, then, I read that statement in the catalog much as I wanted the people in Medina to read my typewriter letter—to make due allowance, because it was seedsman's catalog. Notwithstanding, I got considerably

excited about chufas. After reading the statement over several times I sent for half a peck, and planted them at intervals, until May. They came up rather poorly until the very warm wet weather came on; and when I got back here again in July I found some of the hills a yard high and almost a yard across. I suspect these large hills, however, were where Wesley got a pretty big dose of poultry manure all in one place. With every hill like these few, the yield might be something like the amount mentioned in the catalog; but in our soil, we so far find it a lot of work to dig them. By the way, I raised chufas when a boy, more than fifty years ago, and I used to think then they were almost equal to nuts when dried, and I have used them here quite a little in the place of nuts. There has always been one trouble however—the outside coating is hard, and obviously hard to digest, even if you do chew it "everlastingly." In spite of all I can do, dear reader, I fear there must be still *another* digression. You probably all know how much has been said about the importance of using whole-wheat flour; and Terry, for the same reason, eats raw wheat that he may get the whole or nearly the whole of that outside shell put there by the great Father, because he intended it for food. Our good neighbor, Rev. Ten Broeck, tells us that the rice of commerce is spoiled in the same way by polishing off the most valuable part; and Upton Sinclair said somewhere that he was obliged to eat the peelings of apples and potatoes in order to get a proper amount of coarse material in his food. For the same reason, cows and horses must have hay as well as grain or they can not thrive. Of course, *potato* skins must be properly *cooked* to be used for food; and away back when we children roasted potatoes out of doors I discovered that the paring, properly cooked, was the sweetest and most delicious part of the whole potato—that is, "when chewed a long while." You see that, even when a boy, I was *almost* on to Fletcher's and Terry's "racket." Well, now for my discovery: When chufas are baked in the oven, something as we roast peanuts, the outer covering is not only easily masticated, but the nut is to me even more delicious and nourishing than roasted chestnuts. In all our northern cities, and possibly in southern cities also, roasted chestnuts are sold on the street as a great delicacy. Now, if the merits of roasted chufas were well known I feel sure they would prove at least a successful rival, and far—yes, very far, ahead of the peanut, which is such a great staple the world over.

One thing more: I have all my life had more or less trouble with constipation. Once when castor oil, raw wheat, and even plenty of my favorite apples failed, and I was unwilling to resort to drugs, I applied to Ernest, as he usually has a remedy for almost every thing. He directed me to eat a lot of coarse wheat bran; and if I wanted a quick result, to swallow a lot of it without much chewing. It very speedily brought about

the desired result. If we want to clean a bottle inside, we often use sand or sawdust, sometimes both; and while such means are all right for the bottle, one should be careful in the use of so simple a thing as bran in this way—that is, one may do harm by the *too frequent* use of such a remedy. Well, the use of roasted chufas seems to be the best thing in this line I have ever gotten hold of. It is nature's remedy, God's remedy.* Some of my friends have been worrying because I don't get fat on two meals a day. Well, if I continue to enjoy them as I do now, I expect to fat up, something as our pigs used to do when the country was new and we turned them out to feast on the "shack" that they were sure to find in the woods.

Much has been said in the papers lately about its costing so much to live, and I am having many letters asking if it costs much more to live down here in Florida than it does up north, etc. Don't you see how beautifully my great discovery comes in right here? Raise chufas in your back yard, and have the richest and most nourishing as well as delicious food God ever gave to man.† Of course you can not live on chufas alone; but I have something to tell you further. My neighbor Raub, the old gentleman who did so well with the incubator, planted a little patch of upland rice in a part of his garden. Well, after he got back to Florida a few days ago he harvested his rice and he had about three bushels. It almost took my breath away. When I asked him how much fertilizer he used, if I remember correctly he said he used only what those chickens produced that he hatched in that incubator. Thinking rice ought to be cheap where it grows like that, I asked how low I could buy broken rice for my chickens; and after I got 100 lbs. for \$3.00, another neighbor, Mr. Abbott, told me he bought on "bargain day" 40 lbs. for \$1.00. We have been using this broken rice on our table, and I find it just as good as any rice so far as I can see. It is absolutely clean pure rice, and nothing else.

Well, dear friends, I have in this Home paper mentioned just a few things that

should cause us to repeat the words of our text, and it is not because I can live here so cheaply and with so much comfort and enjoyment, but because others, who may have but little to spare may do so—elderly people like myself who can keep chickens, grow rice* and chufas, and stay out in the open air, all day long. Even if Thanksgiving day is past and gone when your eye meets this, can you not stop a minute and say with me, "Oh give thanks unto the Lord, for he is good; for his mercy endureth for ever"?"

Poultry Department

By A. I. ROOT

GETTING A PREPONDERANCE OF PULLETS, ETC.

You ask in your poultry department, Oct. 15, why, in crossing certain breeds of poultry, you got a preponderance of pullets. I have given the matter much thought, and from my own experience in cross-breeding I would explain it in this way: The strongest, blood will prevail; or, to use an old expression, "Blood will tell." The S. C. W. Leghorn is a distinct breed. It has been a Leghorn for hundreds of years. Its qualities are firmly fixed, giving it power to transmit those qualities. While the Buttercup (I do not know its history) may be made up of the blood of several breeds. Likewise the Plymouth Rock-Wyandotte cross. While the Plymouth Rock is not a distinct breed, it is an old-established breed, while the White Wyandotte is of but recent origin.

You can, and I hope you will, prove this by crossing a Leghorn cock with your Buttercup hens, or a Plymouth Rock cock with Wyandotte hens. Be sure your cocks are pure blood, when you should get mostly males. Your discovery may be very valuable.

There is so little if any profit in Leghorn cockerels, and they annoy the pullets so much, I often kill them as soon as I can distinguish their sex, which is about two weeks. I knew I could get color, size, shape, and many other qualities by crossing; but I was too thick-headed to see that I might get *sex* too.

I hope you will experiment some more, and let us know the results. I would advise you not to cross white and brown egg breeds. I do not like cross-breeds; but if they will turn us more money I may grow to like them.

Somersville, N. J., Oct. 22.

L. B. THATCHER.

Thanks for your kind suggestion, friend T. It fully accords with the crosses I have here in Florida. Very few males and pullets are mostly white, with green legs.

*I make below another clipping from Crenshaw's catalog in regard to growing upland rice in Florida:

"*Upland Rice*.—Very popular in this State, and a number of small areas are grown for home use as an auxiliary crop. Should be cultivated on every farm in our Southern country. Several years' experience has demonstrated the fact that rice can be as successfully grown on high lands as elsewhere."

"*Directions for Planting Upland Rice*.—On lands that hold moisture well, such as waxy or post-oak land, plant anywhere. On dry or sandy land, rice is planted in the low places. Prepare the land and cultivate as for corn, except the rows are only 22 to 24 inches apart so that one furrow in each middle, with an 18-inch sweep, usually suffices for a working, and the hills just far enough so it can be hoed. Plant as early in April as you can. Furrows are opened and the seed covered in any way most convenient at the time, just so the seeds get a little dirt over them. Drop 15 or 20 seeds in each hill, and leave all that come up. Cultivate for moisture and to keep down grass and weeds until rice begins to head. It usually ripens the last of August or early in September. The color tells when it is ripe."

*Terry says there should be a movement of the bowels at least once a day, and that twice a day is much better, in order that all refuse and unwholesome matter may be out of the system as speedily as possible for the most perfect health. As a rule, wild as well as domestic animals are seldom troubled by constipation; and the reason is, they take the berries, grains, and fruits whole as nature furnishes them. Can we not learn a lesson from them?

†In a recent issue I had something to say about "emergency foods." Well, the chufas should be roasted over a quick fire or in a very hot oven, so that this tough outer coat will become crisp and easy to chew up fine, something like the peeling of a roasted potato. This baking process drives out all moisture to such an extent that we have a very concentrated food—more nourishment in small compass than even with the parched corn, if I am correct. When Gregory, the veteran seedsman of fifty years ago, first advertised and described chufas he called them earth almonds; and although they grow in the ground I should call them a veritable nut, and I hardly need tell you all late tables giving the amount of nourishment in different foods place nuts far above every thing else.

BLACK CHICKENS FROM A WHITE FATHER AND PLYMOUTH-ROCK MOTHER: MORE ABOUT IT.

Dear Friend:—There is nothing new nor wonderful about your black pullets. You have simply stumbled upon an old law of heredity, or reversion, that has been familiar to breeders of thoroughbred fowls for fifty years. Darwin says in his "Variation of Animals and Plants under Domestication" that the progeny of a first cross always reverts to one or the other of the original ancestors." Now, the original ancestors of the Plymouth Rock fowls were a Dominique cock and a Black Java hen, so you see that any cross made with a Plymouth Rock must revert or hark back to the original maternal ancestor, the Black Java hen? But I wouldn't let a little thing like that worry me. You are only fifty years behind the times. Keep on; you will catch up by and by.

Ashbourne, Pa., Oct. 22.

W. E. FLOWER.

I should not feel "worried" a bit, friend F., for you know that "acknowledged ignorance is the beginning of wisdom." But, my dear friend, you have not touched upon my *great discovery* at all. You have explained, and doubtless correctly, why those chicks were all black; but my "great discovery" was in getting a hatch that is all pullets, or nearly all. Another good friend sends the letter below:

Dear Mr. Root:—I always read with interest the poultry notes which you usually give under "Our Homes." As to the "pullet" theory suggested in the Oct. 15th issue, without *knowing* any thing about the matter I am skeptical, and inclined to believe that the coincidences therein cited are accidental. But my opinion is not worth much. The object of this letter is to induce you, if possible, to pursue the study of the cross-breeds (the Wyandottes and Buttercups) a little further, and then see what you have.

I am inclosing you a short piece from *Harper's Weekly* for June, 1908, describing the experiments of Johann Mendel; and it seems to me you have a splendid opportunity to follow his methods of selection, and then publish results.

Versailles, Ky., Oct. 24.

J. W. CRENSHAW.

It seems from the clipping mentioned that I have been blundering on to the celebrated law of Mendelism. This paper suggests that the first cross will follow the dominant parent. Now, I do not know exactly what "dominant" means in this case; but perhaps I can help things by telling of an incident of yesterday. Before going to Florida we hunted up all the cockerels that were hatched during the summer. Out of something over 100 chickens raised, there were about 20 cockerels having full-blood Buttercup father; and, strangest and most wonderful of all, there was not a cockerel with a Buttercup *comb* after the fashion of the father. I supposed a cross between Buttercups and White Leghorns would, some of them, show the distinctive Buttercup comb.

Now, in the above the White Leghorn mothers ought to have been what Mendel calls the "dominant parent;" and as the mothers were all females (I did not mean this for a joke) is it any thing strange that a large percentage of the chicks were *pullets*? and even of the few eggs that produced roosters, not one in twenty had a Buttercup comb nor any thing like it, only a plain single comb like all the full-blooded Leghorn cockerels.

While I was considering the above, somebody in one of the poultry-journals (I think it was the *Petaluma Weekly*) said that we

want just now a strain of fowls that will be *all* pullets—no males. We have several strains of non-sitters, and why should we not now in like manner have a strain that will give *all* pullets? Perhaps we should have to have a male occasionally to keep up the strain. Who is going to be the first to announce all pullets for the egg-farm? and perhaps at the same time we can have another strain that will be *all* males, or at least 90 per cent of them, for broiler establishments.

BLACK CHICKS FROM WHITE-WYANDOTTE FATHER AND BARRED-ROCK MOTHER.

I just finished reading your "chicken" page in GLEANINGS for Oct. 15. I can give you some more evidence of those black pullets from full-blooded White Wyandotte cockerel and Barred Rock hen.

We had always kept Barred Rocks till a few years ago, when we decided to change to White Wyandottes. We began with one pen of pure-bred, and after the mating-season was over they were allowed to run together. This occurred for two different years. Of course I was astonished when the cross-bred chicks were as *black as crows*, and kept their color. They made very fine-shaped hens and excellent layers. Of course I prefer any kind of animal or bird of pure blood to a cross, so we finally got to all White Wyandottes and no Barred Rocks, and we are well pleased with the change.

Laharpe, Ill., Oct. 17.

J. S. CAMPBELL.

Thanks, friend C.; but you have omitted the most important part of the matter. Did you have more pullets than roosters? And, by the way, something else may come in right here. Philo, in his book, says an "old male bird," with "30 or 40 lively pullets," will give more pullets than males, and *vice versa*. Has this been sufficiently tested to decide the matter? Where are our experiment stations—those that are making a study of poultry?

BUTTERCUPS, ETC.

Since the editor has so kindly taken up the discussion of Buttercups I shall venture a few remarks which, if not interesting or instructive, may in part be verified by Mr. Root, who recently visited me at Toledo.

Three years ago we had Rocks and Reds of good strain, but were dissatisfied with our egg-production. Undoubtedly we had our ideals too high, which were augmented by reading poultry literature of enthusiasts who had stock and eggs for sale.

To increase the yield we purchased year-old Leghorn hens of good stock, expecting to have fresh eggs all the year. This met with little better success than before.

About six months after purchasing the Leghorns I reluctantly bought Buttercups, adding these to the flock, giving all the same care, diet, housing, range, etc., so conditions, whether good or bad, should have been proportionate. I soon learned that I had an exceptionally good strain of Buttercups or the reverse of the other breeds. But on investigation I found my Rocks, Reds, and Leghorns about the average, some reporting better results, others the same, and still others poorer.

I keep a few Rocks and Reds for mothers, as Buttercups are not reliable for this branch of the poultry industry. From the standpoint of the poultryman I think they can be called absolutely non-sitters; but I have had two hens and a pullet which clucked and seemed broody for three or four days, but during this time they were on the nest but little.

I am not making comparisons among other brood than those mentioned, nor claiming that Buttercups as a whole will excel all other birds as individuals; but taking them as a unit they more completely fulfill my requirements than other breeds, because I find them quiet, gentle, and not inclined to wander. On little range they do well.

The conditions which make other chickens most

successful will apply to these. They are beauties from the time they are hatched. I keep them in sanitary quarters and on free range.

Toledo, O., Nov. 2.

H. V. MEEKER.

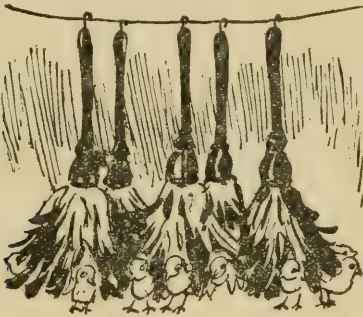
RAISES CHICKS BY FEATHER DUSTERS.

The *Cleveland Plain Dealer* has a special department for preposterous stories. One was about a hen laying three eggs a day, and things of that sort that nobody is expected to believe. Well, a few days ago when they undertook to tell one of their whoppers they blundered on to telling the truth and did not know it. Below is the item and the picture that came with it.

Probably the oddest idea ever made use of in the raising of chickens is a plan operated successfully by Mrs. John Krantz, who resides near Canal Dover.

Wishing to have the mother of a brood of chicks hatch another setting of eggs, the peeps were taken from the mother and placed in a coop in which were suspended a number of feather dusters just reaching the floor.

The young chickens huddled together under the dusters, and were kept as warm as if they had been taken care of by the mother hen.



Now, my opinion is that this good woman actually *did* raise chickens successfully with a feather duster, and I wonder somebody has not caught on to it before. A brooder made of feathers would give the chickens protection for their little bodies, and abundance of fresh air at the same time, in a better way than any thing in the way of lampless brooders or any thing of that kind that has ever been brought out. Do you suggest that there are not feathers enough to go around? Well, if all the feathers that are wasted and thrown away were saved, or if they were picked off the mature fowls just about or a little before the moulting time, there would be an abundance of feathers to brood all the chickens that are hatched in the incubator. Can somebody invent a fabric that will not cost much, with feathers interwoven, so as to hang down over the chicks?

SULPHUR FOR INSECT PESTS, ETC.

Let me give you a simple and inexpensive remedy that will cause your chicks to be free from the pests all this summer and all time to come if you keep it up. Give each grown chicken one teaspoonful of sulphur three times per week in some dough or bran mush, and the little fellows in proportion to size and age. Thoroughly disinfect your poultry-house and yards, and your chicks won't be bothered any more with insects. My wife has been using this remedy for ten years, and never has a mite. If

you start early in the spring, the houses will need no cleaning in that respect.

Waldo, Ark.

G. G. KOONES.

My good friend, we give place to your remedy; but I shall have to confess that I have not very much faith in banishing pests by something that is fed to the chickens. I can readily understand that any thing that would give the chickens better health and more vitality would enable them to resist both insects and diseases. Years ago, when the itch was a common thing with the human family, our mothers used to give us sulphur and molasses; and I believe that, at the same time, the body was anointed with some kind of ointment. Now, did the sulphur, taken internally, have any thing to do with the cure? That is, does sulphur taken with the food get into the circulation so as to show its presence on the surface of the body and thus repel insects? I wish some competent scientific authority, such as our experiment stations or leading poultry journals, would inform us. We thank you all the same for your suggestion.

HEADING OFF "VARMINTS," BUT LETTING CHICKS GO IN AND OUT AT WILL.

Referring to GLEANINGS for Nov. 1, page 710, as to Smith's method for chickens getting into the house by a board to walk up, and be removed after they have gone in, I will say the board is perfectly useless, and a waste of time, putting it there and taking away daily. After using it a few times the chickens will fly up themselves. Simply fasten your main door and let theirs alone. I have used them just that way many years.

Paducah, Ky., Nov. 2.

W. M. JAMES.

CHEERFULNESS IN SPITE OF DISASTER.

Losing so many bees last winter (20 hives out of 24) struck me pretty hard. Such is the fate in all transactions. The farmer, the mechanic, and merchant all meet with some disaster some time or other, and I shall not complain of my loss. I am an optimist.

Oh happy days! make no complaint:

They're always where you think they ain't.

Gnadenhütten, O., Oct. 12.

JACOB HECK.

The above comes from an old soldier who is partly crippled by a gunshot received 48 years ago. We commend him for his cheerfulness under discouragement, and offer a hearty amen to the sentiment of the original poem. By the way, this same friend sent us a little book giving an account of the shameful massacre of a community of Christian Indians over a hundred years ago. A missionary succeeded, during the early days of the settlement of Ohio, in building up a church and converting the Indians to peaceful avocations. If I am correct, a lot of drunken soldiers came upon those people when they were unarmed, and when they did not even attempt any resistance, and shamefully put to death a little settlement at Gnadenhütten, including men, women, and children. The whole thing was an awful disgrace, not only to the new State of Ohio, but to the whole United States. A beautiful monument now stands in the center of the little town to commemorate the awful tragedy.

High-pressure Gardening

By A. I. ROOT

HIGH-PRESSURE CORNFIELDS AND—HIGH-PRESSURE RATS.

On page 572, Sept. 1, I closed my article on cornfields by saying, "If you can come and take a look at our cornfield to-day you will see that I practice what I preach." When I wrote that, my cornfield, especially the part of it that was planted early, as I have before explained, was about the best of any thing in the region roundabout. The great heavy ears were bending over toward the ground, and the whole field of several acres was making a pretty fair show, although we did lose quite a little money by not getting the *whole* field planted just as soon as it was marked and ready to plant, as I have before explained. Well, a few days ago I said the corn was ready to cut, especially the two acres planted first; and yesterday, Sept. 19, our men went out and commenced cutting. After they had been at work a little while I went down to give directions for saving the ears of seed corn. Just a few days before, Mr. Calvert gave me notice that the *birds* were making fearful havoc on that corn. When I got over to the edge of the field and saw ear after ear with the husks stripped back, and a great part of the grain gone, something seemed to say to me that this was *not* the work of birds. I began walking carefully out into the field, speculating meanwhile as to what sort of animal could be eating the corn that way; and then all at once I saw a big rat at work on an ear of corn. He was big and fat because he was a "corn-fed" rat. I thought at first he must be a muskrat from the creek near by; but as he turned around and climbed down the cornstalk I was satisfied he was simply a splendid specimen, in excellent condition (?) of the common rat described in the bulletin from the Department of Agriculture, which tells us that rats are robbing our farmers of over *one hundred million dollars a year*. At the rate this gang of rats was eating up and damaging my nice corn, I could readily imagine that the loss might be up near that enormous figure, especially if this work is going on all over the land.

Let me remark right here that our buildings are all made now with cement floors—barn and stable and cellars—so that the rats are practically barred out. These rats were doing the work out in the field at quite a little distance from any house or barn. Remembering what was said in GLEANINGS a short time ago about feeding rats on corn meal and plaster of Paris, I at once prepared a batch and placed it on wooden dishes in different parts of the field. While doing this I investigated a little more closely. In several places these rats had picked out the chit or germ of the kernel, and dropped the rest on the ground. With rat shrewdness

they had discovered where the best and most nutritious part of the corn lay; and good nice yellow grains of corn were scattered all over the field on the ground with just the chit torn out. This being the case, how much attention will the rats be likely to give to my corn meal and plaster of Paris? The only thing we can do under the circumstances is to husk the corn as soon as it can possibly be done, and get it in our metal corncrib made of perforated galvanized iron. I should like to ask some of the old farmers who read our journal what one is to do in such a predicament. Perhaps several good rat terriers taken down into the cornfield would help matters; but it looks to me just now as if it would take a lot of dogs to take care of the business. And what shall we do with the dogs after we get through harvesting our corn?

Several days after I put out the corn meal and plaster the rats seemed to have vacated. As blackbirds were troubling at the same time, sometimes in flocks of about a thousand, we sent a boy down with a shotgun. Well, the shotgun not only frightened away the birds, but it probably helped by frightening off the rats too. So shotguns and a boy may sometimes be a pretty good combination after all. But the gun should always be in the hands of a very careful boy. In speaking about dogs, it just now occurs to me that, if we had a gasoline dog, something as we have a gasoline horse (that is now so rapidly taking the place of the real horse), it would be an advantage. We would not be required to furnish said dog "board and lodging," when he is not needed.

Later.—Since the above was put in type the corn has been husked and put in the crib. From that part of the field that was planted first, the very day it was marked out, some of the shocks gave $2\frac{1}{2}$ bushels each, but the other part of the field, planted later, was put back by bad weather, and did not come anywhere near the part just mentioned. After planting three times in the effort to get a good stand, as a last resort we filled vacancies with marrow beans, and have to-day, Oct. 29, four bushels of nice beans. You see the beans cost nothing except planting and harvesting, for we should have had to go through the motions of cultivating just the same whether there were any beans there or not.

THE BLUEBERRY UNDER CULTIVATION; CHILD'S WONDERBERRY, ETC.

We are rejoiced to notice that the Department of Agriculture has finally succeeded in growing larger and finer blueberries than any found growing wild. See the report below:

U. S. DEPARTMENT OF AGRICULTURE,)
DIVISION OF PUBLICATIONS,)
JOS. A. ARNOLD, Editor and Chief.)

EXPERIMENTS IN BLUEBERRY CULTURE.

An interesting and significant feature in the experiments reported in Bulletin 193, of the Bureau of Plant Industry, just issued by the U. S. Department of Agriculture, is the light shed on the possible util-

ization of naturally acid lands that occupy extensive areas in the Eastern United States, to produce the delicious blueberry or some other crop that thrives in acid soils.

The Department has found by experiment how blueberries differ from ordinary plants in their methods of nutrition and in their soil requirements, and by means of this knowledge it has worked out a system of pit culture under which these plants attain a development beyond all previous expectations. The failure heretofore of attempts to cultivate blueberries commercially as a market fruit appears to be due to a misunderstanding of the soil requirements of the plants, which, as these experiments show, are radically different from those of our common cultivated plants.

The market would gladly pay a higher price for cultivated blueberries of superior quality. A marked distinction should be made in market quotations between the large plump blueberry (genus *Vaccinium*), whose seeds are so small as to be almost unnoticed when they are being eaten, and the huckleberry (genus *Gaylussacia*) in which the seed is surrounded by a bony covering like a minute peach-pit, which crackles between the teeth. The failure to make this distinction in nomenclature, and the unsightly condition in which careless handling often presents the berries to the buyer, are the cause of much of the failure in southern markets to appreciate the blueberry at its real value. As the blueberry withstands the rough treatment incident to shipment so much better than most other berries, with proper handling it should always reach the market in first-class condition, whether shipped from North Carolina to Boston in early June, or Nova Scotia to Washington in late September, making the blueberry season cover a period of nearly four months.

To those desiring to experiment with field culture of the swamp blueberry, whether with wild plants, seedlings, or plants grown from cuttings, two methods of treatment are suggested, both deduced from the experiments already made. The first method, suited to upland soils, is to set the plants in trenches or separate holes in well-rotted peat at least a foot in depth, and mulch the surface well, either with leaves or with clean sand. The excavations should provide ample space for new growth of the roots, and the peat used may be either of the bog or the upland type, and should have been rotted for several months before using. The soil should afford good drainage, the ideal condition of the peat about the roots of the plant being one of continued moisture during the growing season, but with all the free water draining readily, so that thorough aeration of the mass of peat is assured.

The second method of field culture suggested is to set the plants in a peat-bog after the bog has been drained, turfed, and deeply mulked with sand, just as for cranberry culture, except that no special provision need be made for rapid flooding of the bog for winter, and the ground water of the bog might be kept a little lower than is usual with cranberries. Before beginning the work, these experiments should be carefully studied by any one proposing to undertake the culture of blueberries.

Washington, D. C., Oct. 18, 1910.

Our readers, especially the older ones, will remember the attempt made to grow blueberries in the garden years ago, and the general failure. With the above suggestions, however, I have no doubt we shall succeed. Now, in regard to Childs' wonderberry, or improved sunberry, as he calls it: Last spring when I came from Florida I spent 20 cents for a package of the improved sunberry, so extravagantly lauded during the past season. I received only an exceedingly small pinch of very small seed; and with the best care I could give them in the greenhouse I secured only six plants. Five of them are now pretty well loaded with berries. The berries are very small—not much larger than a good-sized elderberry. Not enough have ripened yet to make a pie or sauce. And, by the way, if I am correct they are advertised to ripen in sixty days.

Mine have had twice sixty days, and very few have ripened at this date, Oct. 21. The garden huckleberry* that I wrote about a year ago has berries more than four times as large, and which ripen very much quicker. These *do* make delicious pies, especially if mixed in with sour apples; and with my present experience I should much prefer them to the sunberry. When the latter gets dead ripe, however, they may prove more worthy of all that has been claimed for them. The garden huckleberry is much easier to gather on account of its larger size, and growing in great clusters. By the way, Childs lays much emphasis on his berries always growing true to name. Among my six plants there is one with different foliage and altogether a different habit. It is unlike the garden huckleberry or sunberry; and, by the way, the sunberry, although plainly a solanum, or nightshade, is quite a little different in foliage, as well as fruit, from the garden huckleberry; but this sport I have been speaking of is different from either; and, strange to tell, it is not annoyed at all by the flea beetle. Both of the other plants would have been eaten up in no time had I not kept the flea beetles off by hand picking, for the flea beetle seems to prefer this nightshade to any other plant grown. While at our experiment station a few days ago one of the directors told me the wonderberry would be sure to introduce flea beetles on our premises in great abundance, even if we had never had them before. When our plants were small I had to keep them covered with cheese-cloth or they would have been eaten up in one day.

Here is something further in regard to the wonderberry:

I am one who invested in John Lewis Childs' wonderberry last spring, 1909. I gave it the best place in my garden; gave it good care all summer; and instead of having a bush I had a few small plants. I then replanted some in pots, and at the present time have five watery-stem plants six inches high that show no signs of making good, to say nothing about the berries that were promised in a few weeks. The only "wonder" I see is that he dare advertise it again this year.

Auburn, N. Y., March 26.

C. G. HAYDEN.

SOWN IN FALL, COMES UP NEXT SPRING.

Last summer I got some sweet clover from the A. I. Root Co., and sowed it in August. We had a drouth soon after, which continued till fall. What came up could not grow much, as it was too dry, and all heaved out during the winter. When spring came the ground was bare. In April I had an accident, and could not work all summer nor oversee the work; so I ordered a man to plow the ground where the sweet clover had been sown. After he had it plowed he told me he would not have plowed that ground, as it was all full of clover, and would have made a pretty good crop. It seems to me I learned something by that. In your booklet on sweet clover we read that it grows one season, bears seed the second season, and, if not harvested, will reseed itself and grow next season. Now, I do not know just what time the seed ripens and falls to the ground; but it seems to me that, if we knew the time, we would know when to sow sweet clover. I had thought that, in my case, the seed germinated and perished in the drouth; but now I believe that but very little of it germinated last fall, but did so in the spring, and grew.

Doylstown, Pa., Aug. 8.

A. C. GROSS.

*The garden huckleberry is $\frac{5}{8}$ inch in diameter, the wonderberry about $\frac{3}{8}$, and hardly a quarter as much in weight.

